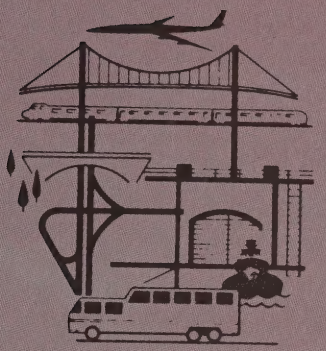
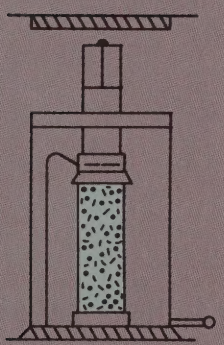
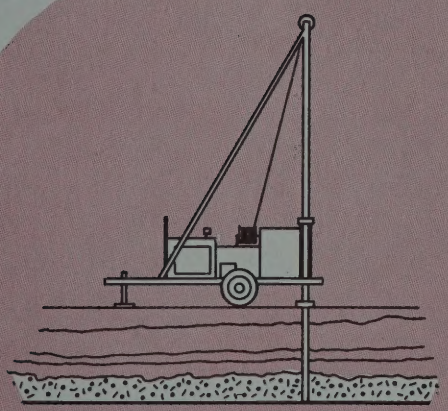
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

RAYMOND T. SCHULER, COMMISSIONER

SOIL MECHANICS
BUREAU







TEST WELL PROGRAM AT PROPOSED GREAT LAKES FISH HATCHERY ALTMAR, NEW YORK

Second Phase - Winter 1974-75

Department of Environmental Conservation
Contract No. D 90598
PIN E103-00-701-06

April 1975

SM 238b (1/73)

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
Raymond T. Schuler, Commissioner

1220 Washington Avenue, State Campus, Albany, New York 12226

May 1, 1975

Mr. Robert B. Norton, Chief
Department of Environmental Conservation
Bureau of Facilities and Construction Management
Room 601
50 Wolf Road
Albany, New York 12205

Attention: Mr. Al Migneault, Supervisor, Design and Construction Section

SUBJECT: Test Well Program at Proposed
Great Lakes Fish Hatchery
Altmar, New York
En Con Contract No. D 90598
PIN E103-00-701.06

Dear Sir:

Attached is a report on the subject project by Francis Irving, Associate Engineering Geologist. The report contains an analysis of the test well drilling and pump test program carried out under Contract No. D 90598, between October 23, 1974 and January 10, 1975.

If you have any questions concerning this report please contact this Bureau.

Very truly yours,

L. H. Moore, Director
Soil Mechanics Bureau

By:

Francis R. Irving
Associate Engineering Geologist

LHM:FRI:BR
Attachment
cc Mr. Robert Griffiths, Supt. of Fish Culture
Mr. Fred VanAlystyne, Sr. Engr. Geologist

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOIL MECHANICS BUREAU

Test Well Program at Proposed GREAT LAKES FISH HATCHERY Altmar, New York

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F. R. Irving
Associate Engineering Geologist

April 1975

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Great Lakes Fish Hatchery, Altmar, N.Y.
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INTRODUCTION

The area of the lower Salmon River in the vicinity of Altmar and Bennett Bridge was originally investigated for the Department of Environmental Conservation by the Department of Transportation during 1973, as part of a search for a suitable site for the proposed Great Lakes Fish Hatchery. The original investigation included seismic explorations and a limited number of small diameter drill holes. Subsequently, the services of Geraghty and Miller, Inc. consulting ground water geologists, were retained to evaluate the ground water potential at four sites in the area. The site just east of Altmar where the Beaverdam Brook enters the Salmon River was chosen as the primary site because it appeared to have a good ground water potential and was desirable for other reasons as well.

The program carried out by Geraghty and Miller consisted of twenty-three small diameter wash borings, two eight inch test wells, one twelve inch test well and one twenty-four inch test well. One of the eight inch test wells (TW 8-2), capable of producing 330 g.p.m., was left in place. This well is located along a tributary to Beaverdam Brook locally called Brown's Creek.

Geraghty and Miller's report indicated that there was a 90% certainty of obtaining 700 g.p.m. and a 50% certainty of obtaining 1400 g.p.m. of ground water in the vicinity of Site I, based on the successful completion of TW 8-2. At the same time, Kramer, Chin and Mayo, Inc., hatchery design consultants, reported that the proposed hatchery could operate on 1,000 g.p.m.

of ground water, the rest (approx. 7,000 g.p.m.) to be surface water obtainable from the Salmon River.

As a result of this it was decided that the Department of Environmental Conservation would let a contract for additional test wells in the vicinity of Site I and that the Department of Transportation would help supervise the field work. The contract was awarded to the Tully Drilling Company, Inc. of Poyntelle, Pa.

TEST WELLS

Twenty-four test wells were drilled under the contract. They consisted of twelve 6 inch, elever 8 inch, and one 12 inch diameter holes. Four of the 8 inch and the single 12 inch diameter test wells were developed and tested. These test wells were left in place to be used as production wells along with the one 8 inch diameter well completed under the previous contract. An attempt was made to develop one other test, TW 8-8, however after 17.5 hours the well yielded only about 100 g.p.m. with maximum drawdown. The well was left in place but is not considered as a production well. The remaining 8 inch and all of the 6 inch diameter holes were exploration and/or observation wells.

One of the new production wells, TW 8-5, is completed in rock. The rest are screened wells in gravel. In addition, one rock well, TW 8-3, was left in place which is capable of producing 100 g.p.m.$\pm$ of water with a very noticeable odor of H_2S. This well was not tested and is not considered a production well.

All well screens installed were stainless steel Johnson telescopic types. The screens installed in two of the wells, TW 12-2 and TW 8-13, have 1 foot sections of blank pipe added between the top of the screen and the lead packer.

The logs of all holes completed under this contract are included under

Appendix A in this report. The records of the pump tests completed under this contract are included in Appendix B. The locations of all holes drilled to date in the vicinity of Site I are shown on the map contained in the envelope at the back of this report.

GEOLOGY

The geology of the area has been covered in a general way in the previous reports by Geraghty and Miller. The following information is included in this report because it is essential to the understanding of the ground water situation at the well sites adjacent to Site I.

The Beaverdam Brook starts in a region of northwest trending rock ridges with thin till cover that is typical of this section of the Tug Hill Upland. It then traverses the pitted outwash and Kame and Kettle topography of the lateral moraine that separates the upland from the Ontario Lake Plain in this area. During the last 3500 feet before entering the Salmon River, the Beaverdam flows through a former embayment of glacial Lake Iroquois. Brown's Creek joins the Beaverdam in the middle of this stretch about 1800 feet from its mouth..

Brown's Creek is a small tributary to the Beaverdam which starts in springs that drain part of the pitted outwash in the Kasoag area. The creek flows entirely in the kame deposits except for the last few hundred feet where it flows in the old embayment.

The northwest trending bedrock ridges and thin till cover of the Tug Hill Upland that are evident in the upper reaches of the Beaverdam basin continue westward under the moraine. Here the granular deposits have been superimposed on them partially masking them. Site I and Brown's Creek lie in a valley between two such ridges. Beaverdam Brook cuts through the easterly ridge just before entering the embayment.

There are also a few drumlins in the morainic belt. Lighthouse Hill is one. The small hill just west of where the Beaverdam approaches Power House Road (north of TW 8-13) is another. There also appears to be one buried under the ice-contact deposits south of the Riverside Cemetary. Reworked ice-contact deposits are found in some of the kettle holes which have been breached by the Beaverdam and its tributaries, and in the old embayment area. Organic silts are found in some of the larger kettle holes and glacial lake silts are found farther out in the embayment area.

The Beaverdam drainage basin is approximately 15.3 square miles in area. The area drained by Brown's Creek is 1.97 square miles or about 12.9% of the Beaverdam basin. About 45% of the Beaverdam basin, including all of the area drained by Brown's Creek, is covered by granular deposits containing many undrained depressions, i.e. kettle holes.

DEVELOPMENT OF WELLS

All the new production wells were developed by alternately pumping and surging with air. Development time varied from six hours to seventeen and one-half hours. The results in general improved the initial yield considerably, however, TW 8-14 was the only well to obtain the 80%+ efficiency that is practically possible.

PUMP TESTS

All pump tests were constant rate for 24 hours with the exception of TW 12-2 which was pumped for 31 hours 40 minutes. The pumping rates were generally high in order to obtain more information on the aquifer in a limited time. Because of the nature of the deposits in which the wells are located, both recharge and impermeable boundaries were expected to show up frequently.

Circular orifice weirs were used for measuring the discharge rate during the tests. A gate valve was used to control the rate.

PUMP TEST RESULTS

Test Well TW 12-2

TW 12-2 is located along Smokey Road 345 feet east of TW 8-2, the producing well completed under the previous contract. TW 12-2 is terminated in 10 feet of 125 slot screen exposed from 43 feet to 53 feet below existing ground surface. The static level was 8 feet below ground surface at the time of this test. The aquifer is a layer of medium to heavy gravel with some coarse sand, part of an ice contact deposit.

The well was pumped at 460 g.p.m. for 31 hours 40 minutes. Water levels in TW 8-2, TW 6-3 and TW 6-4 were monitored during the test. TW 8-2 started showing results very early in the test and at the end of the first hour or so was dropping at the rate of 1.5 feet per log cycle. The rate slowed to 1.2 feet per log cycle toward the end of the test. This drop in the rate of decline in the water table may have been due in part to the effect of recharge from the rain that fell quite heavily during the night. The static level in TW 8-2 at the start of the test was only two feet below ground surface.

TW 6-3 and TW 6-4 are located 13 feet and 126 feet respectively from TW 12-2. They are both open ended pipes. TW 6-3 yielded 150± g.p.m. and TW 6-4 yielded 100± g.p.m. when installed. The water level in TW 6-3 had declined 7.4 feet and in TW 6-4 had declined 4.1 feet by the end of the test.

The water level in TW 12-2 was down almost 29 feet by the end of the test. At that time, the level was dropping at a rate of 3.35 feet per log cycle. Without any recharge, this rate of drawdown would bring the water level below the top of the screen in the early part of the sixth log cycle,

about 100 days, if TW 12-2 was pumped by itself at 460 g.p.m. in its present stage of development. If TW 8-2 was pumped at 330 g.p.m. during the same time, the water level in TW 12-2 would be below the top of the screen in about seventeen days.

This well was only developed for six hours and is only 40% efficient. It (TW 12-2) is hydraulically connected with TW 8-2, however, it penetrates a lower part of the aquifer with a higher coefficient of transmissivity (78,350 gpd/ft.). With further development TW 12-2 should show a specific yield of around 30 g.p.m. per ft. drawdown at 1,000 minutes. This will allow more water to be removed from storage before recharge. The specific yield is presently 16.4 g.p.m. per foot drawdown at 1,000 minutes.

Test Well TW 8-5

TW 8-5 is located along the old road that runs behind A. Brown's house about 700 feet from the intersection with Smokey Road. The aquifer is sandstone. Rock was encountered at 55 feet and the well was continued to 75 feet.

The water levels were monitored in two existing holes, TW 8-1 and TH 12, during the test. They are located 20.7 feet and 12.8 feet respectively from TW 8-5. TW 8-1 was screened and pumped under the previous contract. The yield was only 10 g.p.m. and the screen was removed. The bottom of the casing is at 46 feet below ground surface, 14 feet above the top of rock according to the log. TH 12 is a 2 inch diameter hole finished in a 5 foot screen set near the top of rock. The water level in TW 8-1 had declined 17 feet by the end of the test while the water level in TH 12 was down almost 33 feet after dropping 16.5 feet in the first minute. This appears to reflect the amount of overburden between the top of rock and the respective intakes.

The pump intake in TW 8-5 was set at 56 feet with the static level at 2.6 feet. The well was pumped at 280 g.p.m. for 24 hours. The water level dropped to 51.4 feet by the end of the test. The rate of decline was quite erratic due in part to fluctuations in the pumping rate and also the variability of the overburden that is in hydraulic contact with the bedrock within the cone of influence of the well. The average rate of decline after the initial drop was 3.3 feet per log cycle, but stabilized at rates of less than 1 foot per cycle for long periods and then dropped one foot or more between readings. The specific yield was 5.5 g.p.m. per foot drawdown at 1,000 minutes.

Test Well TW 8-6

TW 8-6 is located east of Brown's Creek about 200 feet north of the dam on the upper pond. It is on an old logging road that formerly crossed the creek below the dam. It is finished in a 10 foot length of 150 slot well screen. The top of the packer is 73.5 feet below ground. The screen is exposed from 76.5 feet to 84 feet. The static level was 24.75 feet below ground at the time of the test. The aquifer is a layer of coarse sand and fine to medium gravel in an ice contact deposit.

The well was pumped at 368 g.p.m. for twenty-four hours with a drawdown of 29.1 feet. The specific yield at 1,000 minutes was 13.5 g.p.m. per foot of drawdown. The water level was dropping at a rate of approximately one foot per log cycle after the first five minutes. The rate increased to 2.2 feet per log cycle after the first 500 minutes and stayed there for the remainder of the test.

TW 6-8 was intended to be an observation well for TW 8-6; however, fine sand from beneath the aquifer flowed up the casing. Attempts to bail out the casing were unsuccessful and therefore the hole could not be used as

an observation well. TW 8-3, the rock well with the H_2S odor located 433 feet west of TW 8-6, was monitored. It began to show a slight decline after 500 to 700 minutes, but had only dropped one-half foot by the end of the test. The rebound in TW 8-6 was recorded in order to obtain aquifer information.

The residual drawdown graph shows a coefficient of transmissivity of 60,500 gpd/ft. The extension of the line on the residual drawdown graph for TW 8-6 passes 3 to 4 inches below the zero point indicating a somewhat limited aquifer. This condition is not unexpected in view of the fact that the well is located in an ice-contact deposit.

Test Well TW 8-13

TW 8-13 is located just west of an old logging road that roughly parallels Beaverdam Brook. It is about 900 feet north of TW 12-2 and about 300 feet east of the brook. The aquifer is deltaic material deposited in the former embayment of glacial Lake Iroquois. TW 8-13 is finished in a 10 foot section of 125 slot well screen with the top of the packer 31.5 feet below ground surface. The screen is exposed between 33 feet and 43 feet. The static level was 8.1 feet at the time of the test.

The well was pumped for twenty-four hours at an average rate of 335 g.p.m. The actual rate varied between 343 g.p.m. and 310 g.p.m. due primarily to variations in the generator speed. At the end of 400 minutes it was noticed that water was escaping from the ditch being used to conduct water away from the well site and most of it was re-entering the ground about 150-200 feet from the well. The problem was corrected by the time the test reached 430 minutes. The sharp drop of 1.6 feet between 500 minutes and 750 minutes on the time drawdown curve for TW 8-13 was apparently due to this. The rate of drawdown returned to 0.6 feet per log cycle after this drop.

TW 8-12 and TW 6-9 were used as observation wells. TW 8-12 is located 165 feet east and TW 6-9 is located 15.8 feet south of TW 8-13. Water levels in both wells started to drop slowly after ten minutes and then showed an apparent impervious boundary effect. The water level in TW 8-12 dropped at a rate of 0.7 feet per log cycle between 150 minutes and 450 minutes and then the rate increased to 1.6 feet per log cycle through the end of the test. TW 6-9 dropped steadily at a rate of 4.9 feet per log cycle between 100 minutes and 1,000 minutes but may have showed a decrease in that rate by the end of the test. There was a temporary decrease in the rate between 400 and 500 minutes.

The coefficient of transmissivity is greater than 100,000 gpd/ft. from the time drawdown graphs but is 45,000 gpd/ft. from the distance drawdown graph. This discrepancy may be due to the fact that the observation wells are open ended pipes and not screened for the same section of the aquifer as the producing well. This may cause a lag in the response of the observation wells. The lag is due to differences between the vertical and horizontal permeability of the aquifer.

The specific yield of this well was 18.6 g.p.m. per foot of drawdown at 1,000 minutes.

Test Well TW 8-14

TW 8-14 is located along the west side of the old road that passes behind A. Brown's house and about 300 feet north of the intersection with the road to the upper pond on Brown's Creek. It is finished in a 10 foot 125 slot stainless steel well screen exposed between 24 and 33 feet. The top of the packer is at 22.5 feet below ground. At the start of the test the static level was 5.6 feet below ground surface. The aquifer is medium to coarse gravel and medium sand, (ice contact deposits).

The pump intake was set 8.7 feet below static level. The well was pumped at 303 g.p.m. for 1,100 minutes by which time the water level had almost reached the pump intake. The pumping rate was cut back to 254 g.p.m for the remainder of the test. The water level was dropping at a rate of 4 feet per log cycle in both the pumping well and the observation well at the time the pumping rate had to be cut back. Between 1,100 minutes and 1,440 minutes, the end of the test, the pumping level stayed just above the intake in the pumping well but dropped 0.1 feet in the observation well. This would show a drop of less than 1 foot per log cycle, indicating that a recharge boundary must have been reached about the time that the pumping rate had to be cut back. That is, the change in the rate of decline of the water table from 4 feet per log cycle to less than 1 foot per log cycle is too great to be due entirely to a 16% decrease in the pumping rate.

The specific yield of this well was 30 g.p.m. per foot drawdown at 1,000 minutes.

LONG TERM YIELD

All of the producing wells, except TW 8-13, are in the lower part of the area drained by Brown's Creek. The amount of water available for recharge to these wells is difficult to compute at this stage because of the lack of long term flow data on Brown's Creek and because of the peculiar drainage area involved. Using the figures from Bennett Bridge for the years 1942 through 1972, the mean annual rainfall for the area was 48.8 inches with a standard deviation of 6.4 inches. That is equivalent to 793 g.p.m. plus or minus 105 g.p.m. with a 25% infiltration factor. If a 30% infiltration factor is used because the entire drainage area is covered by granular deposits containing many undrained depressions, then 990 g.p.m. plus or minus 130 g.p.m. would be available for recharge.

During the five year drought, 1960 through 1964, the mean annual rainfall was 40.4 inches with a standard deviation of 1.1 inches. That is equivalent to 658 g.p.m. plus or minus 18 g.p.m. at a 25% infiltration factor and 790 g.p.m. plus or minus 22 g.p.m with a 30% infiltration factor.

The minimum annual seven consecutive day ten year flow for Beaverdam Brook has been estimated at 9.5± cfs. The estimate is based on a comparison between the flow data collected on Beaverdam Creek between March 28 and September 30, 1974, and the long term data from Sandy Creek. The comparison may result in a figure which is too low due to a proportionally larger capacity for bank storage in the Beaverdam drainage area. If 9.5 cfs is used as the safe yield for the Beaverdam Brook drainage area then Brown's Creek, which accounts for 12.9% of that area, would have a safe yield of about 550 g.p.m. if the runoff figures were the same for both Brown's Creek and Beaverdam Brook. However, a field check on 12/17/74 showed Brown's Creek contributing 16% of the total flow in the Beaverdam, which would be equivalent to 680 g.p.m. with a MA7CD (10 year) flow of 9.5 cfs. Since the field check was made during a period of high runoff when the percentage contribution of Brown's Creek to the total flow would be much less than in periods of low flow, the figure of 700 g.p.m. would seem conservative for the safe yield of the Brown's Creek drainage area.

The estimated safe yield of 700± g.p.m. from the Brown's Creek basin plus 300± g.p.m. from TW 8-13 gives a total of 1,000 g.p.m. long term yield for the existing wells near Site I. The long term yield of 300± g.p.m. for TW 8-13 is based on the assumption that further developing will be done on the well and also that the proposed dam on Beaverdam Brook will maintain a slightly higher water table and supply additional recharge to it.

RECOMMENDATIONS

If any further field data is gathered on the flow in Beaverdam Brook, it should include spot checks on the flow in Brown's Creek. The flow in Brown' Creek can be checked out at either the lower or middle dam.

A separate contract should be set up specifically for developing and testing the existing wells at Site I. TW 12-2 and TW 8-13 definitely need further developing. TW 8-5 and TW 8-6 could probably also be improved somewhat.

The contract should contain provisions for pumping up to three wells at one time. The wells should be pumped a minimum of three days and preferably much longer because of the heterogenous nature of the aquifers. Seven days would take the tests through the fourth log cycle.

The contract should also contain provisions for pulling casing and plugging unnecessary holes left over from previous contracts in order to prevent possible pollution of the ground water at some time in the future.

The contract should specify that the pump tests be conducted during late summer and early fall when snow melt and heavy rains won't confuse the picture.

The results of this test program will supply additional information in order to set up a program of well field management that will allow the wells to recover the maximum yield that the well field can deliver.

ADDITIONAL WELL SITES

Additional well sites may exist further up the Beaverdam in the area between TW 6-10, TW 8-10 and Hamlin Road. Both TW 6-10 and TW 8-10 yielded some water (50 g.p.m. $\pm$). Well sites with 30 feet or more of saturated gravels may be found in this area.

The area adjacent to the Salmon River upstream from TW 24-1 should also be investigated. Beaverdam Brook apparently cut through north of the small drumlin east of TW 24-1 and may have left some good granular deposits. The indications now are that rock keeps rising between TW 24-1 and the ridge one-half mile further upstream, however, this may not be so.

At least one additional well can probably be located in the vicinity of TW 8-13.

Additional seismic explorations should be carried out in these areas before any drilling is done. The primary purpose of the seismic explorations would be to obtain more control on the bedrock surface.

APPENDIX A

WELL LOGS

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-1
Gr. Elev. 597
Location E 659,300
N 1,283,180

Depth, ft.	Description
0	sand, gravel and cobbles
10	sand, gravel, trace silt
	sand-trace silt and gravel
20	sand and gravel, some silt
	sand, gravel, clay (gray)
30	sand and gravel, some clay (gray)
	Rock (gray sandstone)
40	

Date Start 10/23/74
Date Finish 10/24/74
Contractor Tully
Driller F. Matarese
EIC ----
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 40 ft.
Casing Diam. 6 in.
Casing Length 38 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data

Static Depth to Water 10 ft.
Pump Setting ------
Pumping Rate ------
Date and Duration ------
Specific Capacity ------

Recommendations

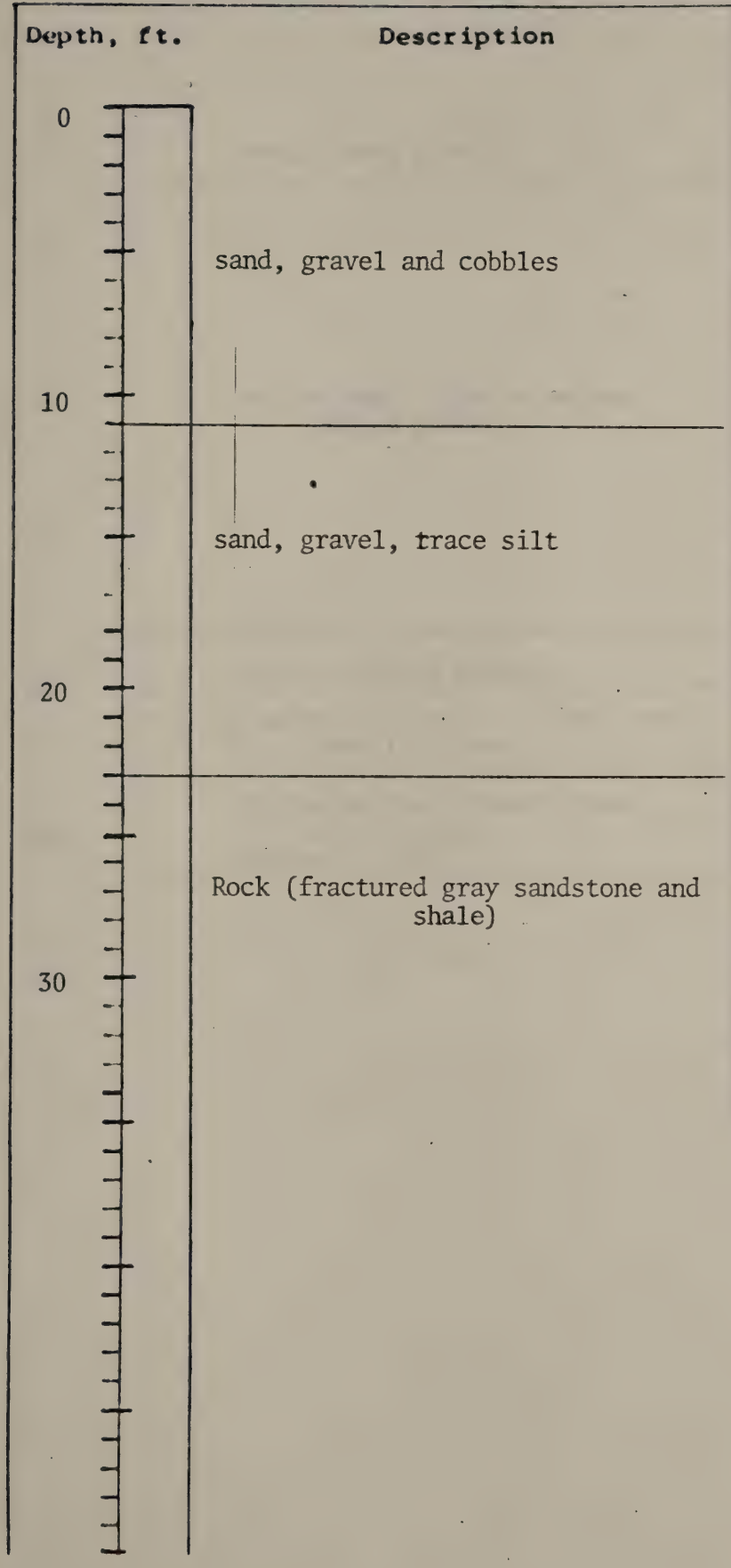
Pump Setting ---
Pumping Rate ---

Remarks Pumped 50 GPM ± from open end with casing at 36 feet. Air jets below casing. Casing pulled and hole back-filled on 12/11/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-2
Gr. Elev. 591
Location E 660,250
N 1,282,430



Date Start 10/24/74
Date Finish 10/24/74
Contractor Tully
Driller F. Matarese
EIC ----
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. > 6 in.
Final Depth 35 ft.
Casing Diam. 6 in.
Casing Length 24 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data

Static Depth to Water ---
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

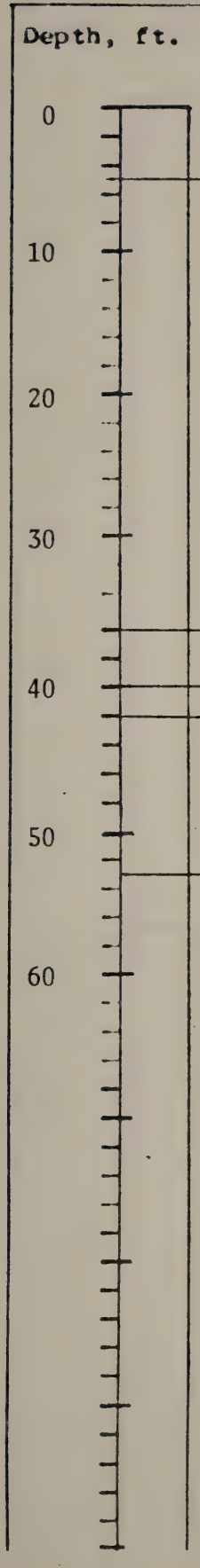
Pump Setting ---
Pumping Rate ---

Remarks Dry Hole
Casing pulled and hole backfilled on 10/25/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery: Altmar, N. Y.

Test Well No. 6-3
Gr. Elev. 571
Location E 661,950
N 1,278,650



Depth, ft.	Description
0	sand, trace gravel
10	
20	Medium sand, fine to medium Medium gravel
30	
40	silt, sand and gravel
	coarse sand, medium gravel some cemented gravel
50	Medium to heavy gravel some coarse sand Bottom of Hole
60	

Date Start 10/28/74
Date Finish 10/29/74
Contractor Tully
Driller F. Matarese
EIC
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 53 ft.
Casing Diam. 6 in.
Casing Length 53 ft.
Casing Above Ground 0
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development Two hours with compressed air at bottom of casing

Test Data

Static Depth to Water 7.44 ft.
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

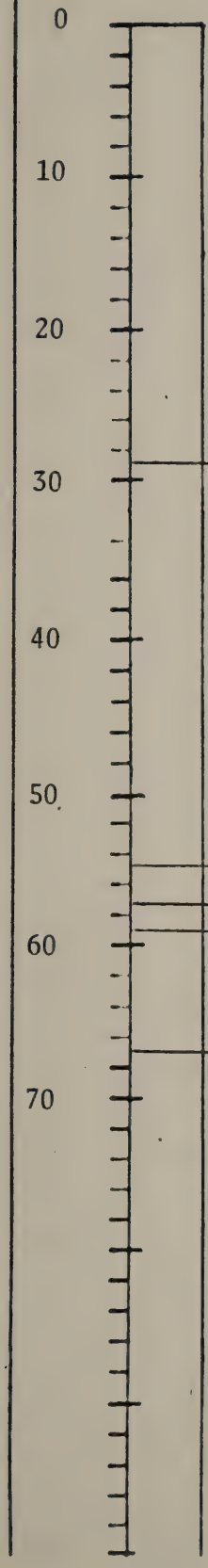
Pump Setting
Pumping Rate

Remarks Left in place as obs. well for 8-3. Yielded 150 GPM± from open end.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 105-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-4
Gr. Elev. 581
Location E 661,825
N 1,278,650



Description

fine sand, trace gravel

medium to coarse sand, medium gravel

coarse sand, medium gravel some clay (gray)

coarse gravel, some coarse sand

coarse sand and medium to coarse gravel, trace clay

Fine sand

Date Start 10/30/74
Date Finish 10/31/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 67.5 ft.
Casing Diam. 6 in.
Casing Length 67 ft
Casing Above Ground 0
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development Two hours with compressed air at bottom of casing

Test Data

Static Depth to Water 16.29 ft.
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

Pump Setting ---
Pumping Rate ---

Remarks Left in place as obs. well for 8-3. Yielded 100 GPM ± from open end.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-5
Gr. Elev. 555±
Location E 663,050
N 1,279,070

Depth, ft.	Description
0 – 8	gravel, some sand
8 – 31	sand, gravel and clay
31 – 32	boulder
32 – 36	sand and gravel
36 – 40	gravel sand and clay
40 – 50	Rock (sandstone and shale)

Date Start 11/6/74
Date Finish 11/6/74
Contractor Tully
Driller E. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 55 ft.
Casing Diam. 6 in.
Casing Length 43 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data

Static Depth to Water 1 ft.
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

Pump Setting
Pumping Rate

Remarks No appreciable ground water
Well abandoned 11/6/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701 06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-6
Gr. Elev. 540+
Location E 664,530
N 1,279,200

Depth, ft.	Description
0	
	sand, medium to coarse gravel
10	
20	sand, gravel, some cemented gravel
	Gravel, sand and clay
30	Rock (gray sandstone)

Date Start 11/14/74
Date Finish 11/14/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 44 ft.
Casing Diam. 6 in.
Casing Length 30 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data

Static Depth to Water
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

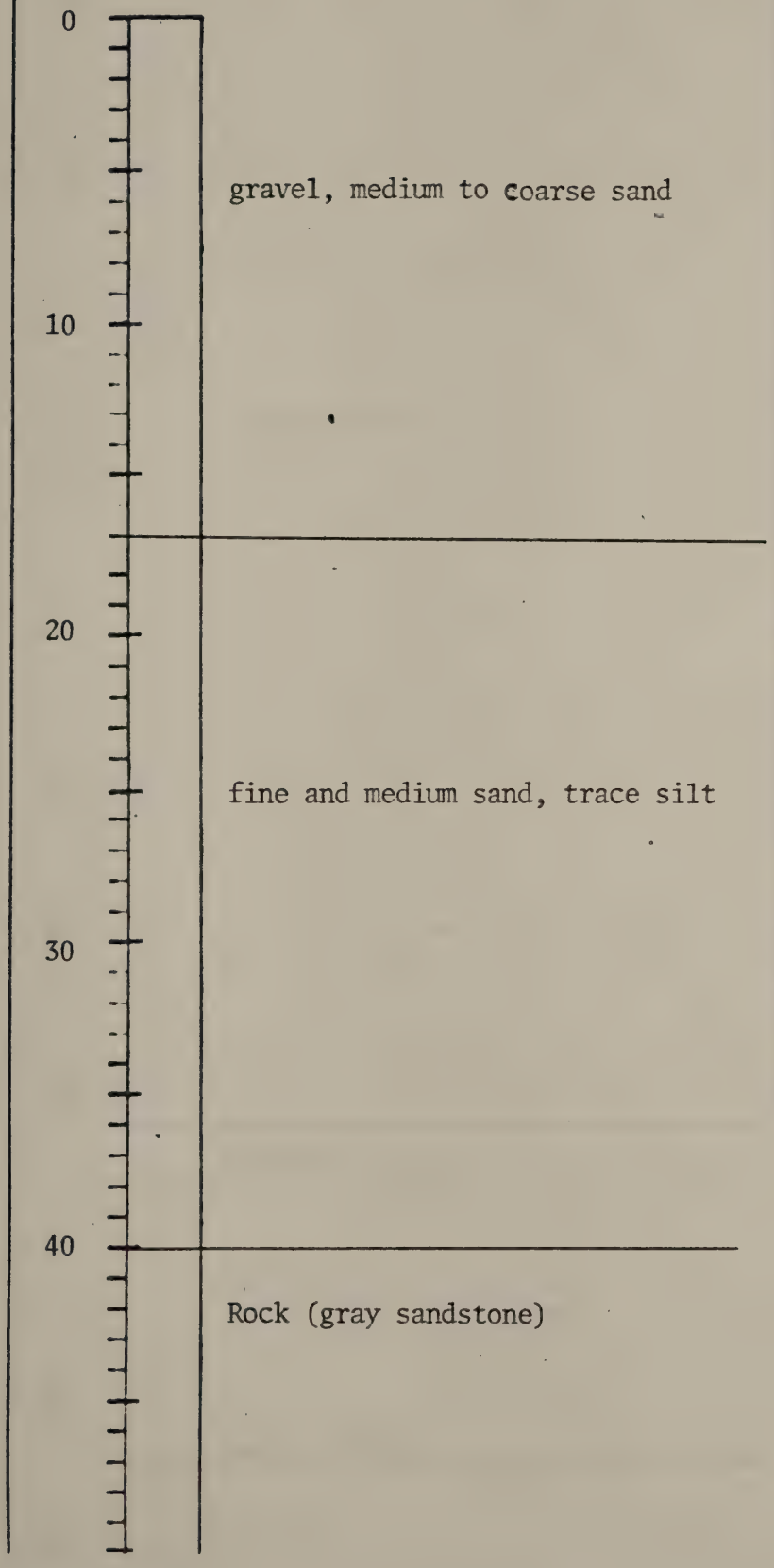
Pump Setting
Pumping Rate

Remarks Small show of water
Well abandoned 11/14/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-7
Gr. Elev. 543±
Location E 664,120
N 1,279,680



Date Start 11/14/74
Date Finish 11/15/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 41 ft.
Casing Diam. 6 in.
Casing Length 41 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data

Static Depth to Water 1 ft.
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

Pump Setting ---
Pumping Rate ---

Remarks No appreciable ground water observed.
Well abandoned 11/15/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-8
Gr. Elev. 608+
Location E 660,560
N 1,277,190

Depth, ft.	Description
0 – 72	sand and silt
72 – 75	sand and gravel
75 – 94	sand, silt, trace gravel
94	Bottom of hole

Date Start 11/21/74
Date Finish 11/21/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 94 ft.
Casing Diam. 6 in.
Casing Length 75 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development See Remarks

Test Data

Static Depth to Water 21.6
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

Pump Setting ---
Pumping Rate ---

Remarks Intended obs. well for 8-6. Casing pulled back to 74 feet when sand flowed up hole. Contractor was unable to bail sand from casing. Attempt to install well point below casing by jetting through sand was unsuccessful

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-9
Gr. Elev. 572
Location E 662,140
N - 1,279,460

Depth, ft.	Description
0	
	sand, some gravel
10	
	sand, medium to coarse gravel
20	
30	
40	
	Bottom of Hole

Date Start 12/19/74
Date Finish 12/19/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 42 ft.
Casing Diam. 6 in.
Casing Length 42 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development Two hours with compressed air at open end of casing.

Test Data

Static Depth to Water 8.6
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

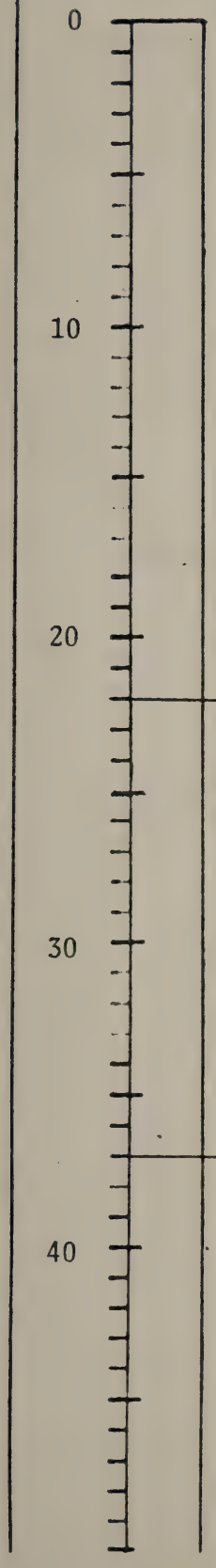
Pump Setting ---
Pumping Rate ---

Remarks Observation well for 8-13

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery: Altmar, N. Y.

Test Well No. 6-10
Gr. Elev. 585
Location E 659,820
N 1,281,140



Description

sand and fine to medium gravel

sand, medium gravel and clay

Rock (fractured gray sandstone)

Date Start 12/19/74
Date Finish 12/20/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 41 ft.
Casing Diam. 6 in.
Casing Length 38 ft.
Casing Above Ground 1 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---=
Grout ----

Development None

Test Data

Static Depth to Water 5 ft.
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

Pump Setting ---
Pumping Rate ---

Remarks 50 GPM ± sulphur water at 27 ft. Small amount of water at 37 ft. Hole Abandoned.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-11
Gr. Elev. 576
Location E 662,000
N 1,277,350

Depth, ft.	Description
0	
	sand, fine to medium gravel
10	
	medium to coarse gravel, sand
20	
	Bottom of Hole

Date Start 1/6/75
Date Finish 1/6/75
Contractor Tully
Driller E. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 24 ft.
Casing Diam. 6 in.
Casing Length 24.5 ft.
Casing Above Ground 1.5 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development One hour with comperessed air at end of casing.

Test Data

Static Depth to Water 5.16
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

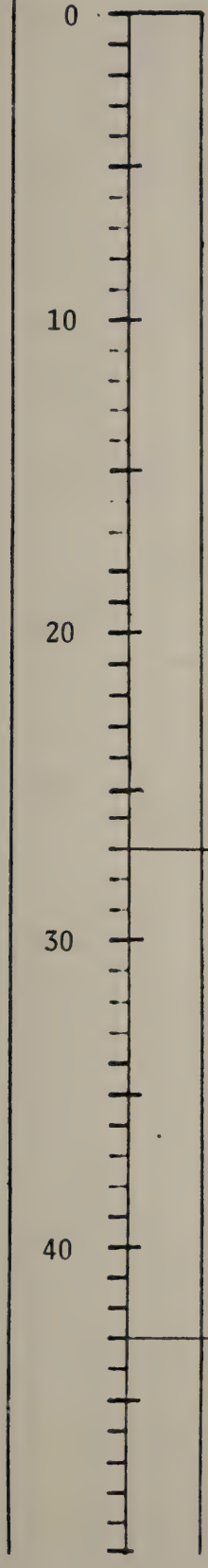
Pump Setting ---
Pumping Rate ---

Remarks Observation well for 8-14.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 6-12
Gr. Elev. 560±
Location E 662,550
N 1,279,360



Description

sand and gravel

gravel, sand and clay

Rock (gray sandstone fractured)

Date Start 1/8/75
Date Finish 1/9/75
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 6 in.
Final Depth 48 ft.
Casing Diam. 6 in.
Casing Length 45 ft.
Casing Above Ground 2 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data

Static Depth to Water 5 ft.
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations

Pump Setting ---
Pumping Rate ---

Remarks Produced 75 GPM ± from fractured rock but water would not clear. Abandoned 1/9/75

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 105-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 12-2
Gr. Elev. 571.8
Location E 661,950
N 1,278,640

Depth, ft.	Description
0	sand, trace gravel
10	medium sand, medium to fine gravel
20	
30	
40	silt, sand and gravel
	coarse sand, medium gravel some cemented gravel
50	medium to heavy gravel, some coarse sand
	Bottom of hole
60	

Date Start 11/1/74
Date Finish 11/5/74
Contractor Tully
Driller E. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 12 in.
Final Depth ~ 53 ft.
Casing Diam. 12 in.
Casing Length 45 ft.
Casing Above Ground 2 ft.
Screen Type Johnson 125 slot SS
Screen Setting 43-53
Gravel Pack
Grout

Development Six hours using compressed air directed within and above screen

Test Data
Static Depth to Water 8.17
Pump Setting 40.8
Pumping Rate 460 GPM
Date and Duration 11/12/74 - 31 hrs
Specific Capacity 16.4 gal. per ft.

Recommendations
Pump Setting See remarks
Pumping Rate

Remarks Need further development. and long term test.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E103-00-701-06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-3
Gr. Elev. 586
Location E 661,050
N 1,277,150

Depth, ft.	Description
0 – 30	fine to coarse sand, medium to coarse gravel
30 – 40	coarse sand, some medium gravel
40 – 45	fine to coarse sand, trace silt
45 – 50	coarse sand, medium gravel and cemented gravel
50 – 75	rock (fractured gray sandstone)
75	Bottom of Hole

Date Start 11/7/74
Date Finish 11/8/74
Contractor Tully
Driller F. Matarese
EIC
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data

Hole Diam. 8 in.
Final Depth 75 ft.
Casing Diam. 8 in.
Casing Length 55 ft.
Casing Above Ground 1.95
Screen Type --
Screen Setting --
Gravel Pack --
Grout --

Development Two hours using compressed air in fractured rock

Test Data

Static Depth to Water 4.68
Pump Setting --
Pumping Rate --
Date and Duration --
Specific Capacity --

Recommendations

Pump Setting ---
Pumping Rate ---

Remarks Well yields 100-150 gpm of sulphur water from the rock.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103-00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-4
Gr. Elev. 580
Location E 661,800
N 1,278,200

Depth, ft.	Description
0 – 10	sand, trace gravel
10 – 20	Fine to coarse gravel, some fine to coarse sand
20 – 30	Fine to medium sand, trace gravel
30 – 40	Fine sand, medium to coarse gravel
40 – 50	Rock (gray sandstone)

Date Start 11/11/74
Date Finish 11/12/74
Contractor Tully
Driller F. Matarese
EIC
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 59 ft.
Casing Diam. 8 in.
Casing Length 44 ft.
Casing Above Ground 1 ft.
Screen Type --
Screen Setting --
Gravel Pack --
Grout --

Development None

Test Data
Static Depth to Water 0
Pump Setting --
Pumping Rate --
Date and Duration --
Specific Capacity --

Recommendations
Pump Setting --
Pumping Rate --

Remarks No appreciable ground water - well abandoned on 11/13/74.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-5
Gr. Elev. 568
Location E 662,260
N 1,278,090

Depth, ft.	Description
10	sand, gravel and clay
20	fine sand
30	fine sand, some clay
40	coarse sand and fine gravel
50	sand, silt and fine gravel
60	Rock (Fractured gray sandstone)

Date Start 8/13/74
Date Finish 8/14/74
Contractor Tully
Driller F. Matarese
EIC --
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 75 ft.
Casing Diam. 8 in.
Casing Length 57 ft.
Casing Above Ground 1.5 ft.
Screen Type --
Screen Setting --
Gravel Pack --
Grout --

Development 6 hours using compressed air within the fractured rock zone

Test Data
Static Depth to Water 2.58
Pump Setting -56 from ground
Pumping Rate 280 gpm
Date and Duration 11/14/74-24 hours
Specific Capacity 5.53 gpm/ft.

Recommendations
Pump Setting -55 ft.
Pumping Rate See Remarks

Remarks Production well

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-6
Gr. Elev. 611±
Location E 660,580
N 1,277,200

Depth, ft.	Description
10	
20	sand, silt, trace gravel
30	
40	medium to coarse gravel, some sand
50	sand, trace of silt
60	
70	coarse to fine sand
	coarse sand, some fine gravel
80	coarse sand, fine to medium gravel
	sand and silt
90	

Date Start 11/19/74
Date Finish 11/26/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 84 ft.
Casing Diam. 8 in.
Casing Length 78 ft.
Casing Above Ground 1.9 ft.
Screen Type 10 ft. 150 slot Johnson SS
Screen Setting 76½ ft 84 ft.
Gravel Pack --
Grout --

Development 8 hours using compressed air within and above the screen

Test Data
Static Depth to Water 26.65
Pump Setting 69 ft. from ground
Pumping Rate 367 gpm
Date and Duration 12/17/74-24 hours
Specific Capacity 13.5 GPM/Ft.

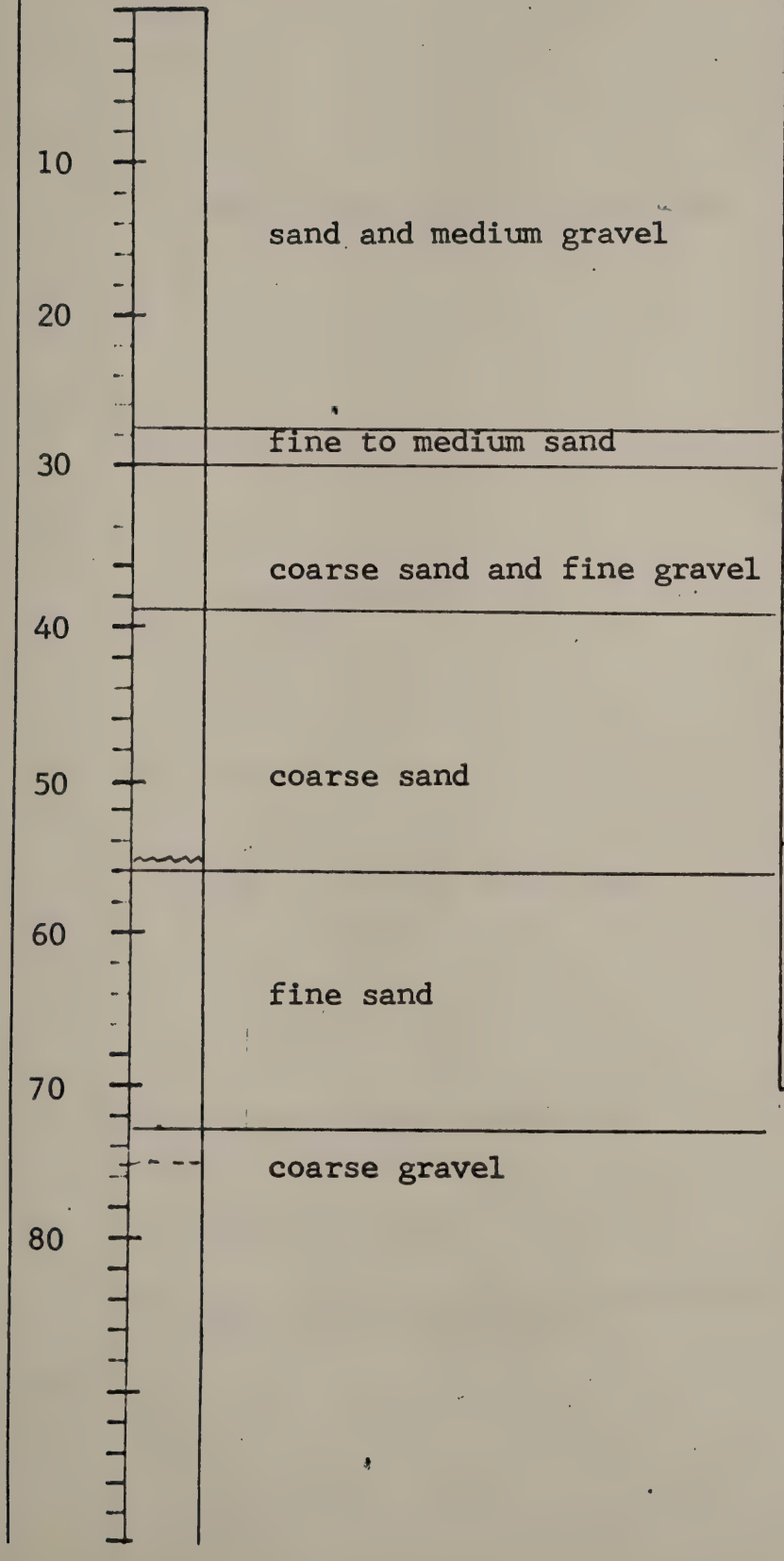
Recommendations
Pump Setting 75 ft. from ground
Pumping Rate See Remarks

Remarks Production well

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-7
Gr. Elev. 619
Location E 660,800
N 1,278,110



Date Start 11/24/74
Date Finish 11/25/74
Contractor Tully
Driller F. Matarese
EIC ----
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 75 ft.
Casing Diam. 8 in.
Casing Length 76 ft.
Casing Above Ground 1 ft.
Screen Type --
Screen Setting --
Gravel Pack --
Grout --

Development 2 hours attempting to jet well point into ruptured well casing past break at 55.7 ft.

Test Data
Static Depth to Water ?
Pump Setting --
Pumping Rate --
Date and Duration --
Specific Capacity --

Recommendations
Pump Setting --
Pumping Rate --

Remarks Casing broke leaving 19.3 ft. of casing at bottom jetting well point failed-well abandoned.

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-8
Gr. Elev. 618
Location E 666,810
N 1,278,110

Depth, ft.	Description
10	sand, trace of silt, some clay
30	fine to medium sand
50	fine to medium sand, some gravel
70	coarse gravel, some sand
80	cemented gravel
	Rock (gray sandstone)
90	

Date Start 11/25/74
Date Finish 12/17/74
Contractor Tully
Driller F. Matarese
EIC --
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 83 ft.
Casing Diam. 8 in.
Casing Length 77 ft.
Casing Above Ground 0.80 ft.
Screen Type 10 ft. 125 slot Johnson SS
Screen Setting 75 ft. — 83 ft.
Gravel Pack ---
Grout ---

Development 17 hours using compressed air directed within and above the screen

Test Data
Static Depth to Water ≈ 46 Feet
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations
Pump Setting ---
Pumping Rate ---

Remarks Yield ≈ 100 GPM at maximum drawdown due to cemented gravel - may be used to monitor water table

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-9
Gr. Elev. 625±
Location E 660,500
N 1,279,020

Depth, ft.	Description
10	
	sand, some gravel
20	
30	
40	
	Rock (gray sandstone)
50	

Date Start 12/4/74
Date Finish 12/4/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 47 ft.
Casing Diam. 8 in.
Casing Length 41 ft.
Casing Above Ground ---
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data
Static Depth to Water ---
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations
Pump Setting ---
Pumping Rate ---

Remarks No appreciable water encountered
Abandoned 12/6/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-10
Gr. Elev. 585±
Location E 658,380
N 1,280,310

Depth, ft.	Description
0 – 15	sand, some gravel
15 – 30	sand and gravel
30	Rock (gray sandstone)

Date Start 12/6/74
Date Finish 12/9/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 42 ft.
Casing Diam. 8 in.
Casing Length 29 ft.
Casing Above Ground --
Screen Type --
Screen Setting --
Gravel Pack --
Grout --

Development None

Test Data
Static Depth to Water ± 7 ft.
Pump Setting --
Pumping Rate --
Date and Duration --
Specific Capacity --

Recommendations
Pump Setting --
Pumping Rate --

Remarks Well yield ≈ 50 GPM with casing pulled back to 23.7 Ft. Abandoned 12/18/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.100-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery: Altmar, N. Y.

Test Well No. 8-11
Gr. Elev. ±620 ft.
Location E 659,700
N 1,280,170

Depth, ft.	Description
0 – 25	sand, silt, some gravel
25 – 30	Rock (gray sandstone)

Date Start 12/10/74
Date Finish 12/10/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 41 ft.
Casing Diam. 8 in.
Casing Length 23 ft.
Casing Above Ground ---
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development None

Test Data
Static Depth to Water ---
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

Recommendations
Pump Setting ---
Pumping Rate ---

Remarks No appreciable ground water encountered
Abandoned 12/19/74

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery: Altmar, N. Y.

Test Well No. 8-12
Gr. Elev. 572
Location E 661,950
N 1,279,580

Depth, ft.	Description
10	sand and fine to medium gravel
20	
30	sand and medium to coarse gravel
40	sand and medium to coarse gravel, some clay
50	Rock (gray sandstone)

Date Start 12/11/74
Date Finish 12/13/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 62 ft.
Casing Diam. 8 in.
Casing Length 48.2 ft.
Casing Above Ground 1.2 ft.
Screen Type ---
Screen Setting ---
Gravel Pack ---
Grout ---

Development Casing perforated at 35 feet

Test Data
Static Depth to Water 9.10
Pump Setting ---
Pumping Rate ---
Date and Duration ---
Specific Capacity ---

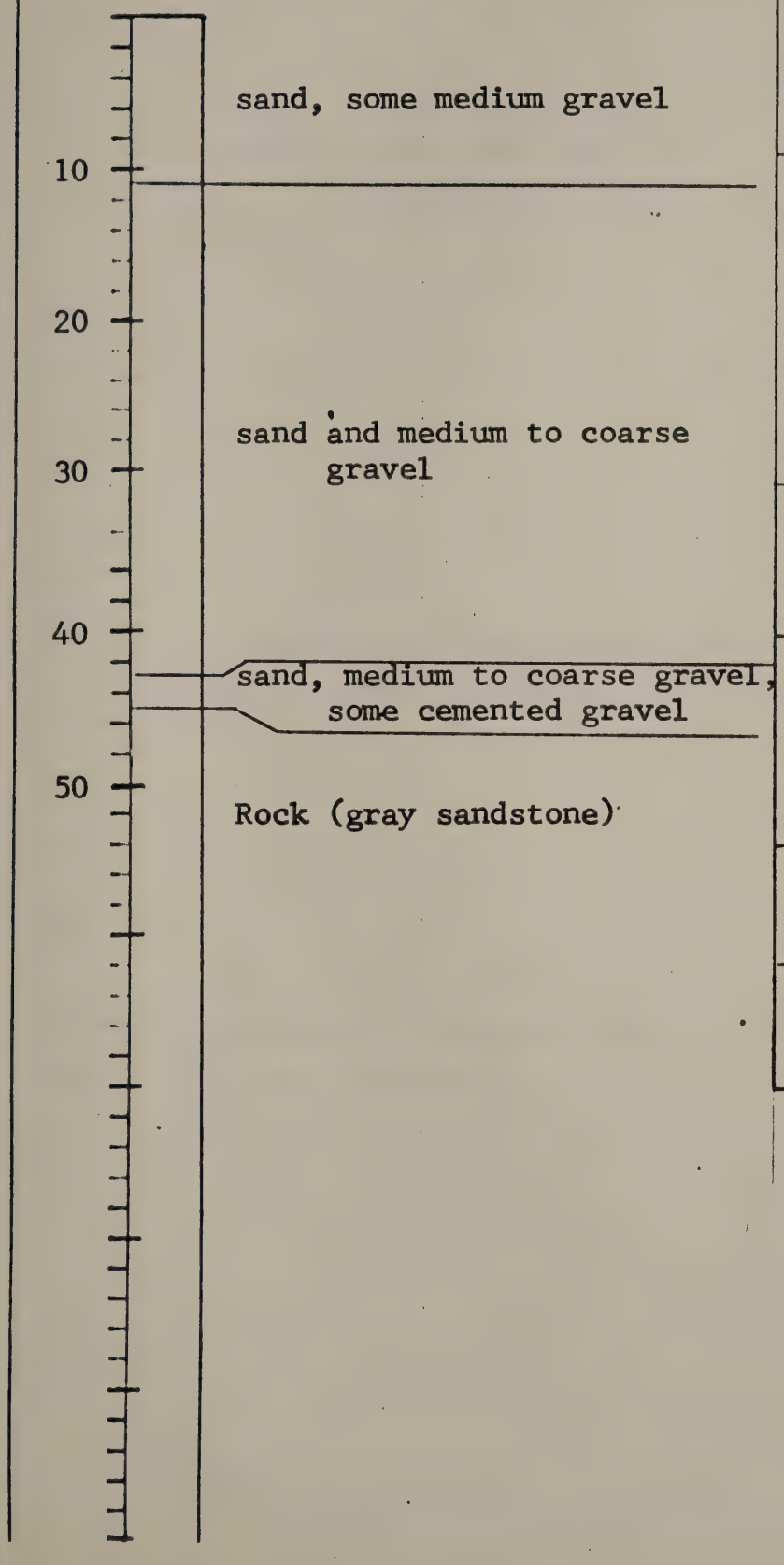
Recommendations
Pump Setting ---
Pumping Rate ---

Remarks 50 – 100 GPM sulphur water at 46 ft. To be used as observation well for 8-13

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. E 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-13
Gr. Elev. 572
Location E 662,130
N 1,279,470



Date Start 12/18/74
Date Finish 12/19/74
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 43 ft.
Casing Diam. 8 in.
Casing Length 44.8 ft.
Casing Above Ground 1.8 ft.
Screen Type 10 ft. 125 slot JohnsonSS
Screen Setting 43 — 33 ft.
Gravel Pack ---
Grout ---

Development 12.5 hours using compressed air within and above screen

Test Data
Static Depth to Water -8.13 ft.
Pump Setting -26.9 ft.
Pumping Rate 335 GPM aver.
Date and Duration 1/8/75-24 hours
Specific Capacity 19 GPM/Ft.

Recommendations
Pump Setting 32 Ft from ground
Pumping Rate See Remarks

Remarks Production well

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Region No. 3
County Oswego
Proj. No. # 103.00-701.06
Requesting Dept. En Con
Project Great Lakes Fish Hatchery; Altmar, N. Y.

Test Well No. 8-14
Gr. Elev. 574 ft.
Location E 662,000
N 1,277,375

Depth, ft.	Description
0 – 12	medium sand, and fine to medium gravel
12 – 33	medium to coarse gravel and medium sand
33 – 35	gray sandstone

Date Start 12/20/74
Date Finish 1/5/75
Contractor Tully
Driller F. Matarese
EIC ---
Inspector R. Bazarnick
Rig Type Air Rotary

Well Data
Hole Diam. 8 in.
Final Depth 33 ft.
Casing Diam. 8 in.
Casing Length 25.1 ft.
Casing Above Ground 1.1 ft.
Screen Type 10 ft 125 slot JohnsonSS
Screen Setting 33-24 ft.
Gravel Pack ---
Grout ---

Development 10 hours using compressed air directed within and above the screen

Test Data
Static Depth to Water 5.62 ft.
Pump Setting 15.4 ft.
Pumping Rate 303 GPM Aver.
Date and Duration 1/8/75-24 hours
Specific Capacity 33.9 GPM/Ft.

Recommendations
Pump Setting 23 feet from ground
Pumping Rate See Remarks

Remarks Production well

APPENDIX B

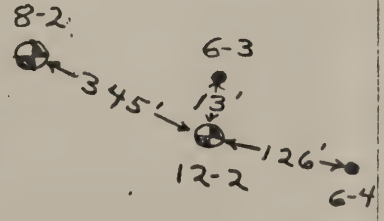
PUMP. TEST DATA

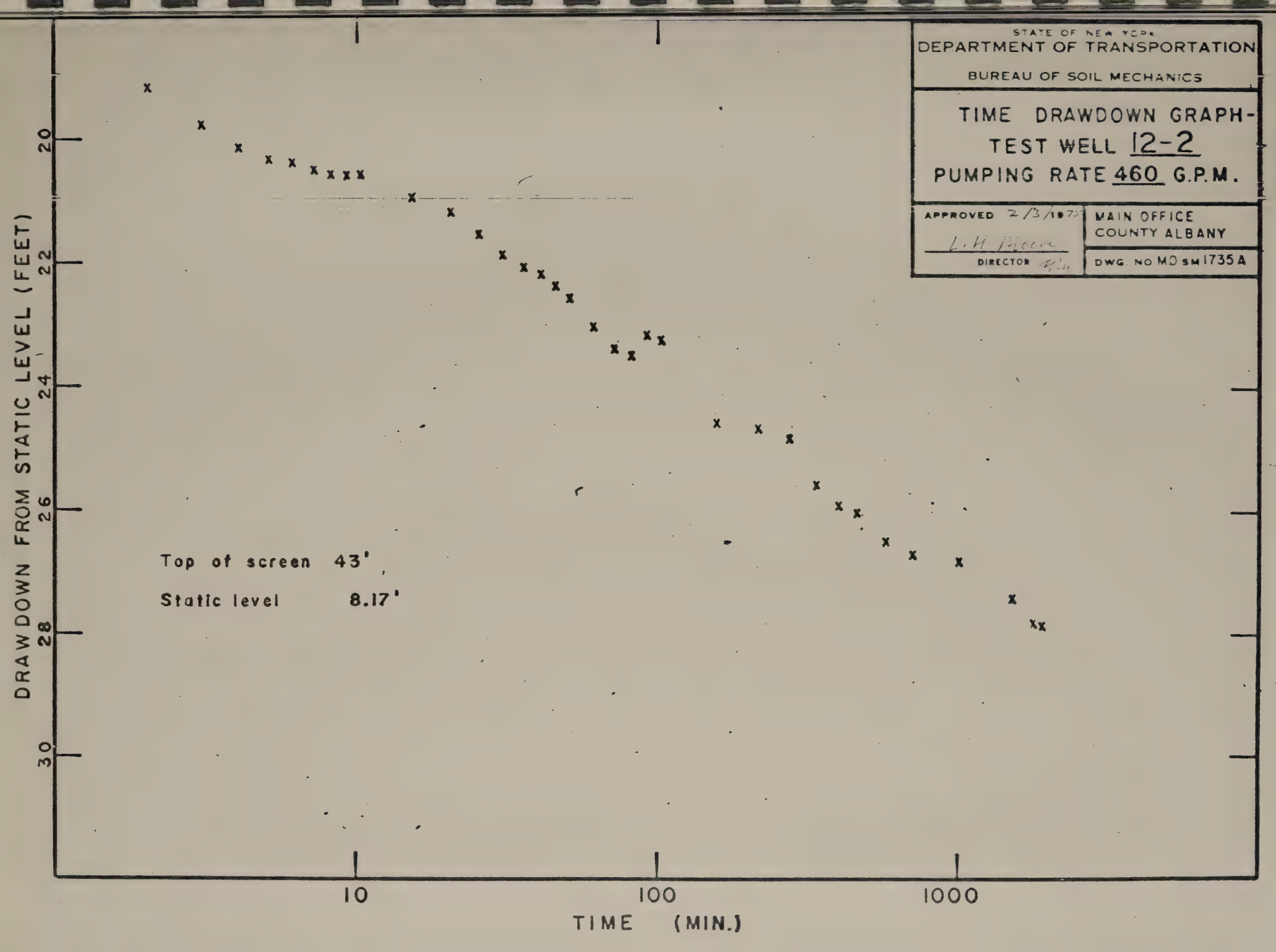
New York State Department of Transportation
Soil Mechanics Bureau

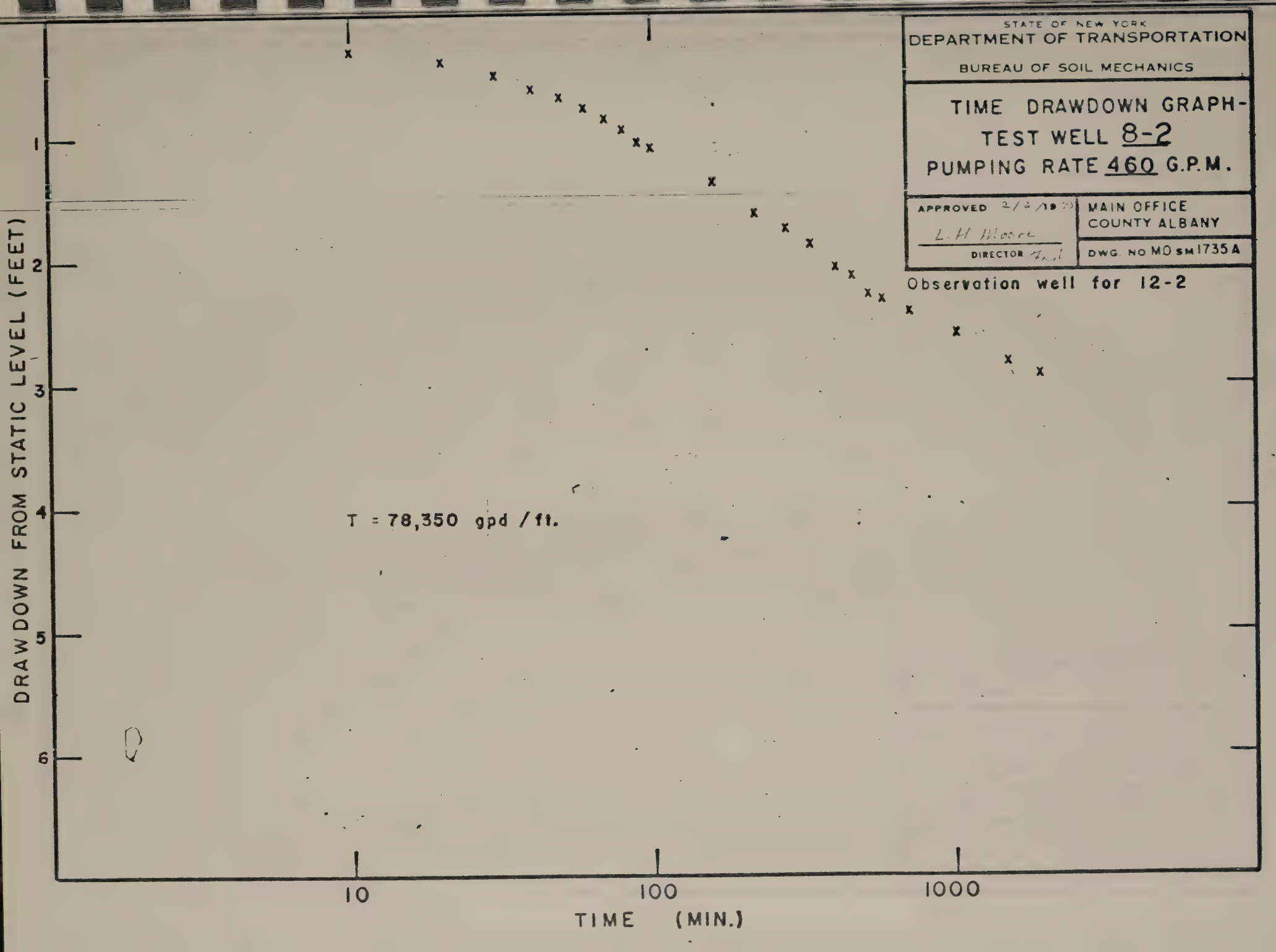
CONSTANT RATE PUMP TEST

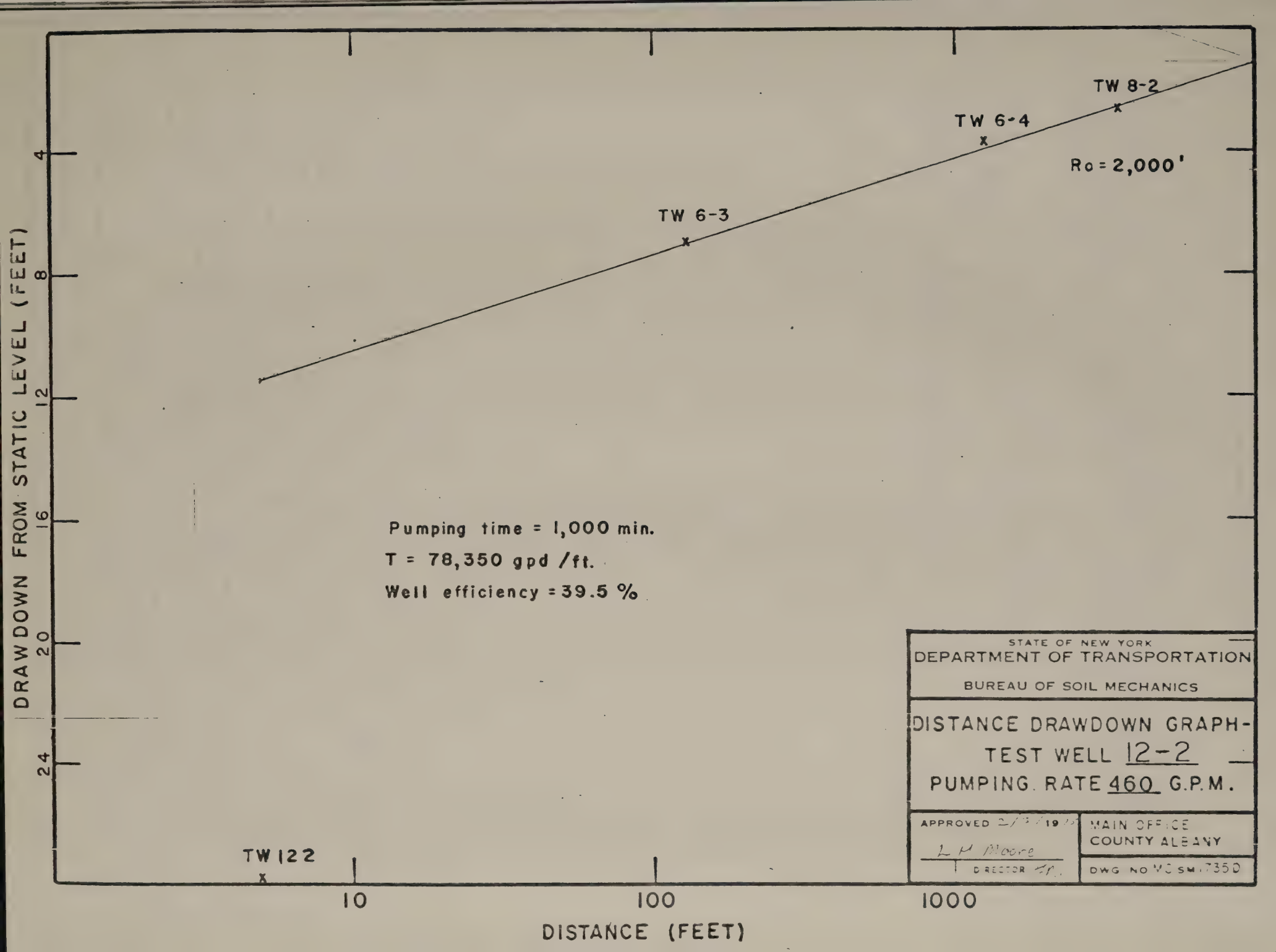
Project: GREAT LAKES FISH HATCHERY - ALTMAR
Region 3 ; County OSWEGO ; PIN E103-00-701-06
Date Nov 12, 1974 ; Time Started 8 00 A ; Pumping Rate 460 GPM
Pump Intake 40.8 below ground surface; Water temp. 47°
Weather: Clear at start - Rain during night.

	Test Well	Observation Wells			Remarks
Hole No.	12-2	6-3	6-4	8-2	
Ground Elev.	571.8	571.1	581.0	565.6	
Static level below ground	8.17	7.44	16.29	2.04	
Finished	Screen	Open	Open	Screen	
Time (min.)	Drawdown (from static level)				
1	19.96	2.19	–	–	
2	20.08	2.23	–	–	
3	20.71	2.27	–	–	
4	21.04	2.44	–	–	
5	21.25	2.48	–		
6	21.29	2.54	–		
7	21.42	2.60	–		
8	21.50	2.62	–		
9	21.50	2.65	–		
10	21.52	2.69	0.04	0.29	
15	21.88	2.85	–	–	
20	22.17	3.06	0.04	0.38	
25	22.50	–	–	–	
30	22.83	3.35	0.04	0.50	
35	23.08	–	–	–	
40	23.19	3.56	0.08	0.60	
45	23.38	–	–	–	
50	23.58	3.73	0.15	0.67	
60	24.02	3.85	0.15	0.75	
70	24.42	4.08	0.17	0.83	
80	24.54	4.19	0.19	0.92	
90	24.17	4.31	0.19	1.04	
100	24.25	4.46	0.21	1.08	
160	25.58	4.81	0.50	1.38	
220	25.60	5.35	0.69	1.63	
280	25.68	5.60	0.75	1.75	
340	26.54	5.83	1.23	1.88	
400	26.94	6.02	1.56	2.02	
460	27.00	6.23	1.75	2.10	
520	27.63	6.31	2.04	2.25	
580	27.50	6.48	2.54	2.29	
715	27.71	6.60	3.38	2.40	
1000	27.85	6.85	3.63	2.58	
1500	28.46	7.35	3.98	2.73	
1800	28.83	–	–	–	
1900	28.85	7.40	4.13	2.83	




STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
TIME DRAWDOWN GRAPH-
TEST WELL 12-2
PUMPING RATE 460 G.P.M.
APPROVED 2/3/1970
L. H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG. NO MO SM 1735 A
DRAWDOWN FROM STATIC LEVEL (FEET)
20
22
24
26
28
30
Top of screen 43'
Static level 8.17'
10
100
1000
TIME (MIN.)


STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
TIME DRAWDOWN GRAPH-
TEST WELL 8-2
PUMPING RATE 460 G.P.M.
APPROVED 2/8/19
L. H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG. NO MO SM 1735 A
Observation well for 12-2
T = 78,350 gpd / ft.
DRAWDOWN FROM STATIC LEVEL (FEET)
1
2
3
4
5
6
10
100
1000
TIME (MIN.)

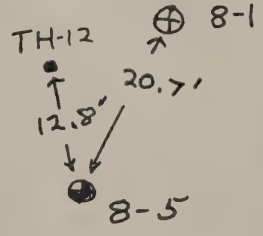

TW 8-2
TW 6-4
Ro = 2,000'
TW 6-3
Pumping time = 1,000 min.
T = 78,350 gpd /ft.
Well efficiency = 39.5 %
TW 122
DRAWDOWN FROM STATIC LEVEL (FEET)
4
8
12
16
20
24
10
100
1000
DISTANCE (FEET)
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
DISTANCE DRAWDOWN GRAPH-
TEST WELL 12-2
PUMPING RATE 460 G.P.M.
APPROVED 2/3/19
L M Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG NO WC SM 7350

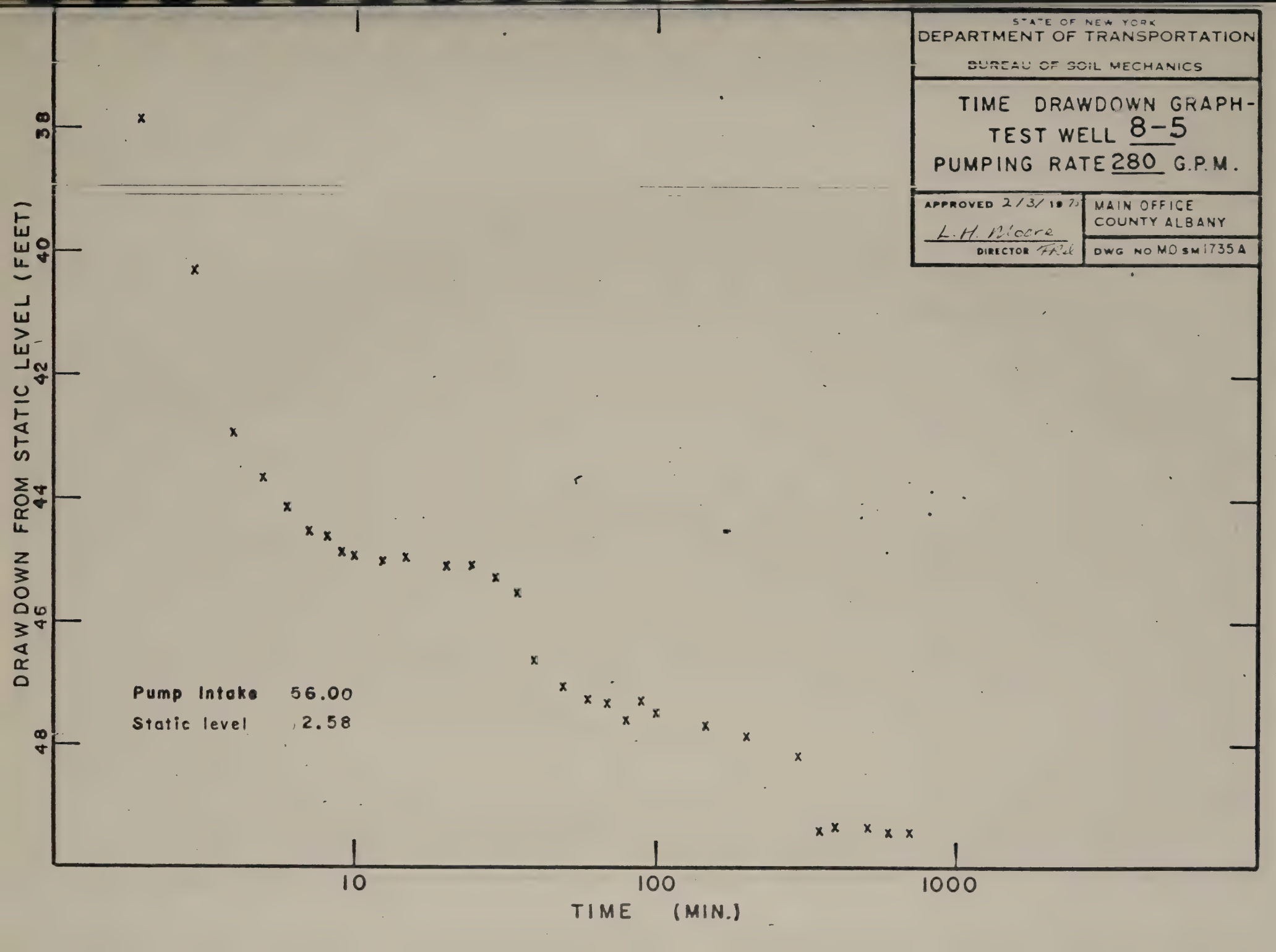
New York State Department of Transportation
Soil Mechanics Bureau

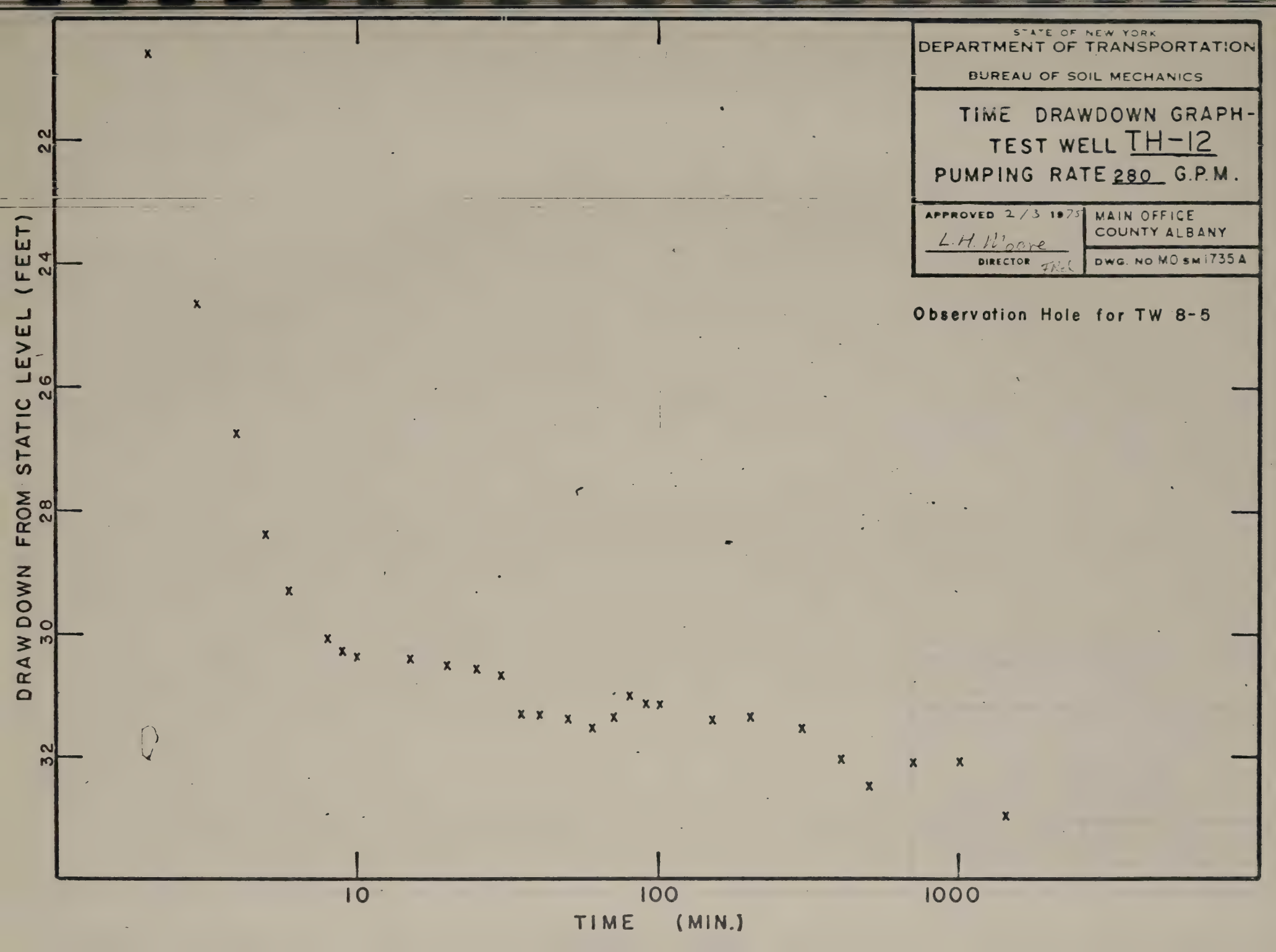
CONSTANT RATE PUMP TEST

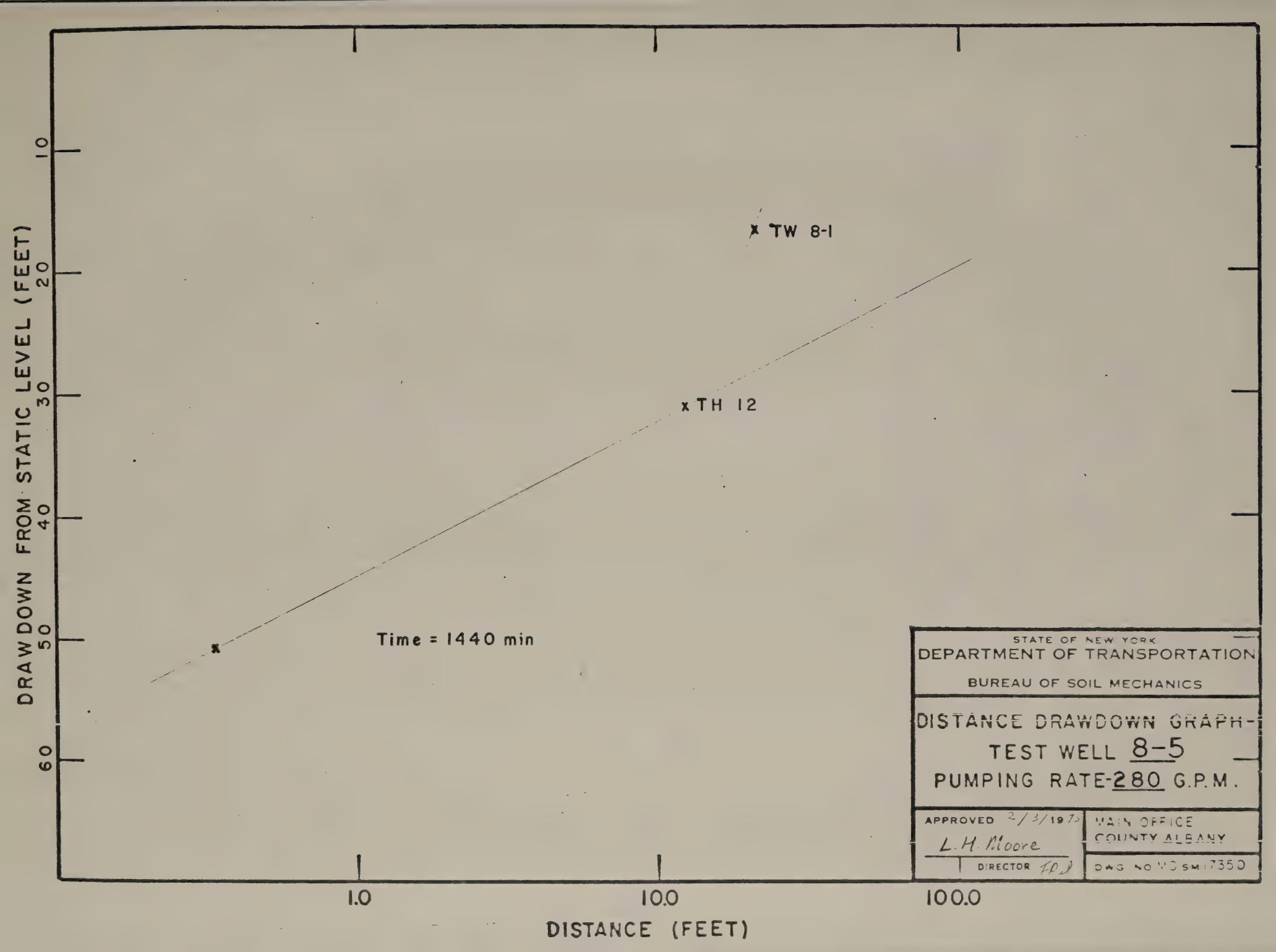
Project: GREAT LAKES FISH HATCHERY - ALTMAR
Region 3 ; County OSWEGO ; PIN E103-00-701.06
Date Nov. 14, 1974; Time Started 1200 ; Pumping Rate 280 GPM
Pump Intake 56' below ground surface; Water temp. 47°
Weather: Raining

	Test Well	Observation Wells		Remarks
Hole No.	8-5	8-1	TH 12	
Ground Elev.	568	569	567	
Static level below ground	2.58	3.43	2.37	
Finished	Rock	Open	Screen	
Time (min.)	Drawdown (from static level)			
1	36.29	-	16.50	
2	37.82	0.04	20.58	
3	40.27	0.17	24.63	
4	42.97	0.37	26.75	
5	43.62	0.50	28.33	
6	44.17	0.50	29.29	
7	44.52	0.83	29.83	
8	44.57	0.96	30.04	
9	44.82	1.08	30.23	
10	44.92	1.17	30.33	
15	44.92	1.42	30.40	
20	45.12	1.42	30.50	
25	45.12	3.50	30.58	
30	45.22	4.08	30.67	
35	46.57	4.58	31.25	
40	46.62	5.17	31.25	
50	47.02	6.08	31.33	
60	47.17	7.08	31.46	
70	47.17	7.75	31.29	
80	47.62	8.25	30.92	
90	47.17	8.92	31.08	
100	47.42	9.33	31.08	
150	47.72	11.25	31.38	
200	47.92	12.58	31.27	
300	48.27	13.40	31.48	
400	49.41	13.33	32.00	
500	49.45	15.48	32.42	
700	49.47	16.17	32.08	
1000	49.72	16.52	32.08	
1400	51.38	16.88	32.96	




STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
TIME DRAWDOWN GRAPH-
TEST WELL 8-5
PUMPING RATE 280 G.P.M.
APPROVED 2/3/19 7?
L.H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG NO MO SM 1735 A
DRAWDOWN FROM STATIC LEVEL (FEET)
38
40
42
44
46
48
Pump Intake 56.00
Static level 2.58
10
100
1000
TIME (MIN.)


STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
TIME DRAWDOWN GRAPH-
TEST WELL TH-12
PUMPING RATE 280 G.P.M.
APPROVED 2/3 1975
L.H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG. NO MO SM 1735 A
Observation Hole for TW 8-5
DRAWDOWN FROM STATIC LEVEL (FEET)
22
24
26
28
30
32
10
100
1000
TIME (MIN.)

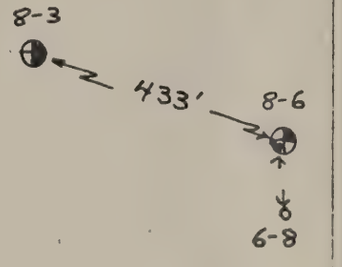

DRAWDOWN FROM STATIC LEVEL (FEET)
10
20
30
40
50
60
TW 8-1
TH 12
Time = 1440 min
1.0
10.0
100.0
DISTANCE (FEET)
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
DISTANCE DRAWDOWN GRAPH-
TEST WELL 8-5
PUMPING RATE-280 G.P.M.
APPROVED 2/3/19
L.H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG NO WO SM 7350

New York State Department of Transportation
Soil Mechanics Bureau

CONSTANT RATE PUMP TEST

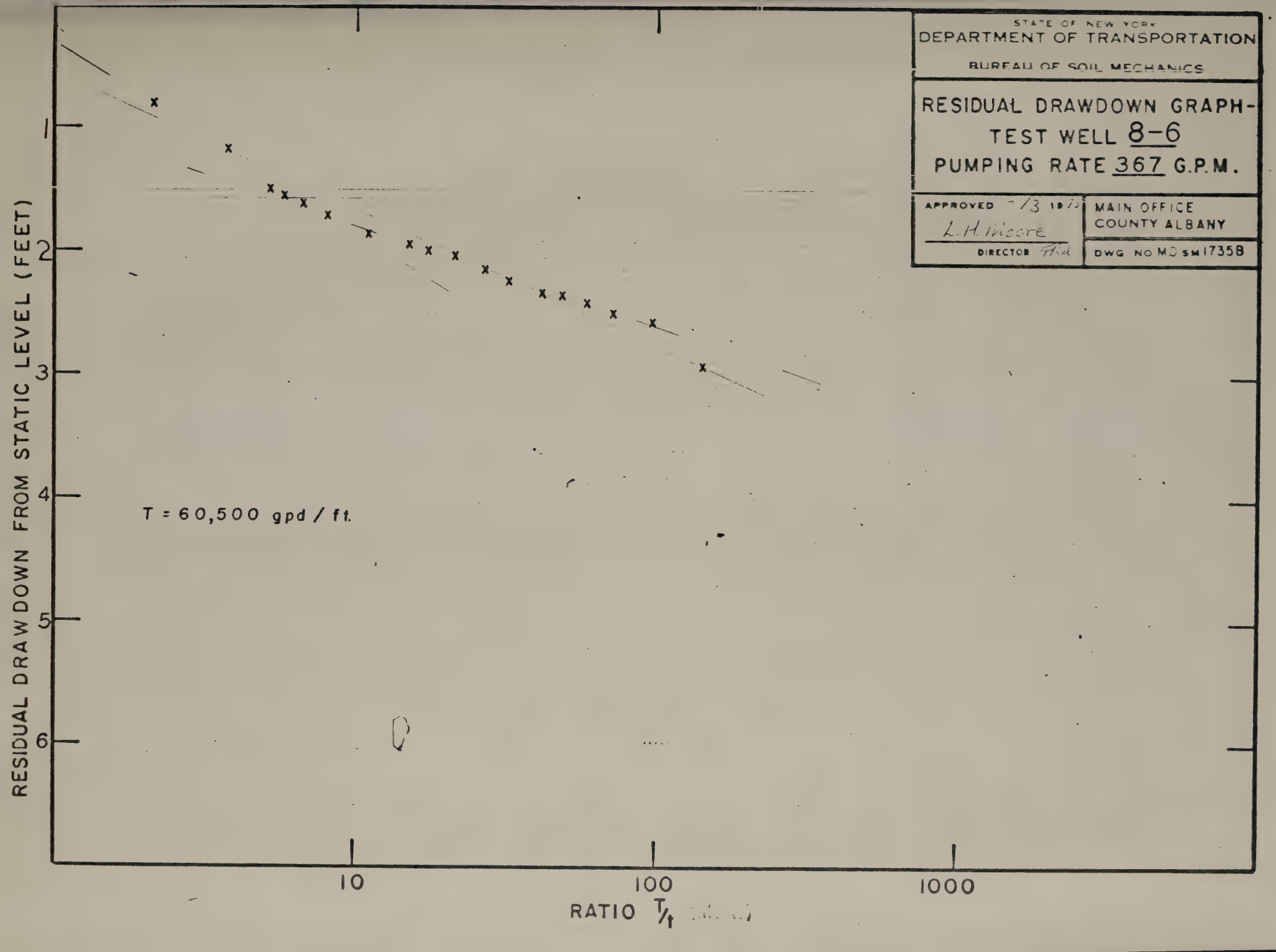
Project: GREAT LAKES FISH HATCHERY - ALTMAR
Region 3 ; County OSWEGO ; PIN E103-00-701.06
Date DEC. 17, 1974 ; Time Started 10 00 A ; Pumping Rate 367 GPM
Pump Intake 70.5' below ground surface; Water temp. 47°
Weather: SNOW AT START OF TEST - COLD AND CLEAR TOWARD END.

	Test Well	Observation Wells			Remarks
Hole No.	8-6	6-8	8-3		
Ground Elev.	611	608	586		
Static level below ground	24.75	21.60	4.68		
Finished	SCREEN	OPEN *	ROCK		
Time (min.)	Drawdown (from static level)				
1	21.95	-	-		* Sand flowed up casing in Hole 68
2	24.90	-	-		
3	25.85	-	-		
4	25.90	-	-		
5	26.05	-	-		
6	26.20	-	-		
7	26.25	-	-		
8	26.30	-	-		
9	26.40	-	-		
10	26.45	-	-		
15	26.65	-	-		
20	26.75	-	-		
25	26.75	-	-		
30	26.85	0.08	-		
35	26.90	0.10	-		
40	26.95	0.13	-		
50	27.00	0.13	-		
60	27.10	0.13	-		
70	27.15	0.13	-		
80	27.20	0.17	-		
100	27.30	0.21	-		
150	27.40	0.33	-		
220	27.55	0.54	-		
280	27.70	0.75	-		
350	27.80	0.92	-		
400	27.90	0.99	-		
500	28.05	1.25	-		
700	28.35	1.63	0.31		
1000	28.70	2.13	0.43		
1440	29.10	2.75	0.48		



RECOVERY IN TEST WELL 8-6

Time Since Pump Started T (min)	Time Since Pump Stopped t' (min)	Ratio T/t'	Residual Drawdown S'	Extended Drawdown S	Calculated Recovery S-S'	REMARKS
1450	10	145.00	2.93	29.100	26.17	
1455	15	97.00	2.60	29.104	26.50	
1460	20	73.00	2.52	29.107	26.59	
1465	25	58.60	2.43	29.111	26.68	
1470	30	49.00	2.39	29.114	26.72	
1475	35	42.14	2.35	29.118	26.77	
1485	45	33.00	2.27	29.125	26.86	
1495	55	27.18	2.18	29.132	26.95	
1510	70	21.57	2.06	29.143	27.08	
1525	85	17.94	2.02	29.154	27.13	
1540	100	15.40	1.98	29.164	27.18	
1590	150	11.27	1.85	29.200	27.35	
1640	200	8.20	1.70	29.224	27.52	
1690	250	6.76	1.62	29.247	27.63	
1740	300	5.80	1.54	29.271	27.73	
1790	350	5.11	1.50	29.294	27.79	
1960	520	3.77	1.18	29.374	28.19	
2710	1270	2.13	0.80	29.800	29.00	


STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
RESIDUAL DRAWDOWN GRAPH-
TEST WELL 8-6
PUMPING RATE 367 G.P.M.
APPROVED 7/3 19
L. H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG NO MO SM 1735B
RESIDUAL DRAWDOWN FROM STATIC LEVEL (FEET)
1
2
3
4
5
6
T = 60,500 gpd / ft.
10
100
1000
RATIO T/t

New York State Department of Transportation
Soil Mechanics Bureau

CONSTANT RATE PUMP TEST

Project: GREAT LAKES FISH HATCHERY - ALTMAR
Region 3 ; County OSWEGO ; PIN E103-00-701.06
Date Jan 8, 1975 ; Time Started 9 AM ; Pumping Rate * GPM
Pump Intake 26.8' below ground surface; Water temp. _____
Weather: Cloudy - Temp. in mid 30's during day - Below freezing at night

	Test Well	Observation Wells		
Hole No.	8-13	6-9	8-12	
Ground Elev.	572	572	573	
Static level below ground	8.13	8.60	9.10	
Finished	Screen	Open	Open	
Time (min.)	Drawdown (from static level)			
1	14.63	-	-	
2	14.93	-	-	
3	14.98	-	-	
4	15.03	-	-	
5	15.03	-	-	
6	15.03	-	-	
7	15.05	-	-	
8	15.08	-	-	
9	15.10	-	-	
10	15.10	-	-	
15	15.18	0.05	0.05	
20	15.25	0.07	0.06	
25	15.30	0.07	0.06	
30	15.33	0.10	0.06	
35	15.38	0.10	0.06	
40	15.41	0.05	0.07	
50	15.50	0.05	0.07	
60	15.58	0.07	0.07	
70	15.63	0.07	0.08	
80	15.65	0.07	0.08	
90	15.73	0.08	0.09	
100	15.77	0.08	0.10	
150	15.80	0.15	0.13	
200	15.89	1.45	0.20	
250	15.93	2.29	0.25	
300	15.83	2.77	0.30	
400	15.83	3.30	0.40	
500	15.94	3.46	0.50	
750	17.51	4.45	0.72	
1000	17.59	5.08	1.00	
1440	17.68	5.75	1.25	

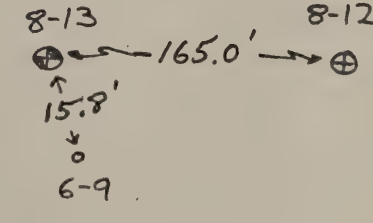
Remarks

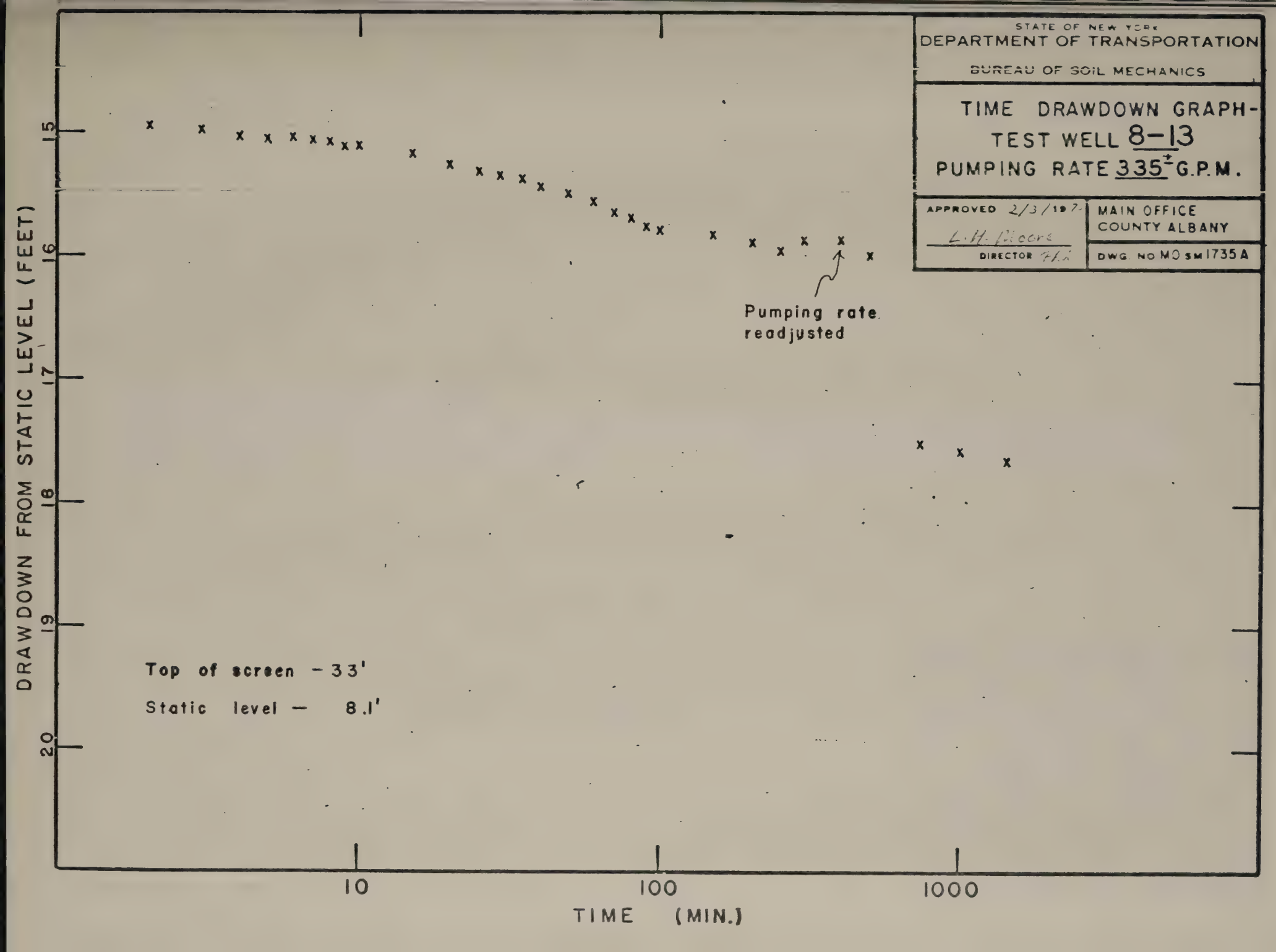
* Pumping rate was 343 gpm at start of Test

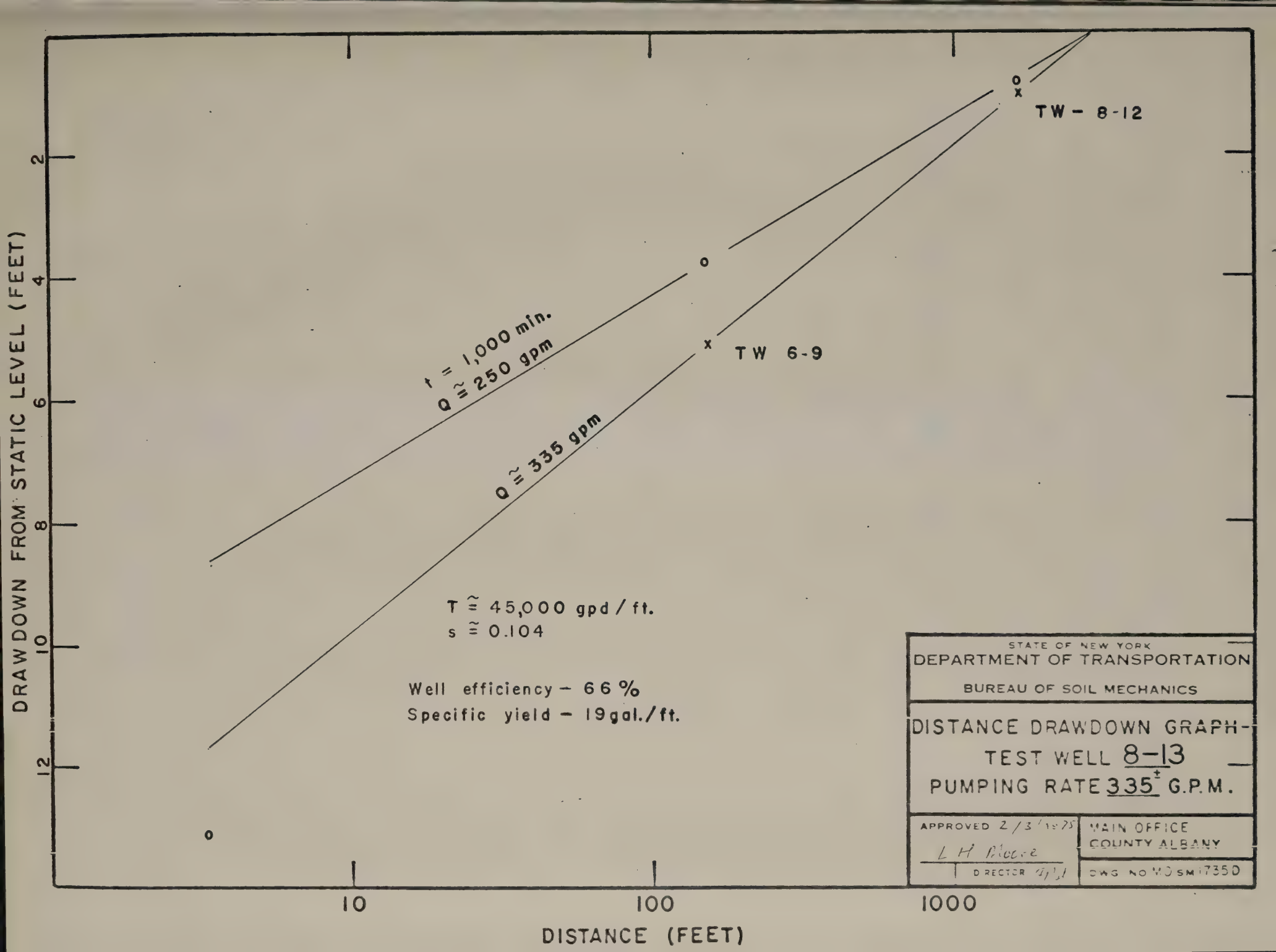
Rate dropped off to 323 gpm at 400 min and was readjusted to 343.

Rate was noted as 333 gpm at 700 min. but gate valve was not re-adjusted.

Rate was 310 gpm at 1440 min.




STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
TIME DRAWDOWN GRAPH-
TEST WELL 8-13
PUMPING RATE 335± G.P.M.
APPROVED 2/3/19?
L. H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG. NO MO SM 1735 A
Pumping rate readjusted
Top of screen - 33'
Static level - 8.1'
DRAWDOWN FROM STATIC LEVEL (FEET)
15
16
17
18
19
20
10
100
1000
TIME (MIN.)

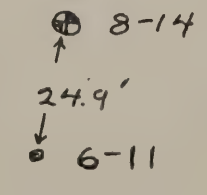

DRAWDOWN FROM STATIC LEVEL (FEET)
2
4
6
8
10
12
TW - 8-12
TW 6-9
t = 1,000 min.
Q ≅ 250 gpm
Q ≅ 335 gpm
T ≅ 45,000 gpd / ft.
s ≅ 0.104
Well efficiency - 66 %
Specific yield - 19 gal./ft.
10
100
1000
DISTANCE (FEET)
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
DISTANCE DRAWDOWN GRAPH-
TEST WELL 8-13
PUMPING RATE 335± G.P.M.
APPROVED 2/3/1975
L H Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG NO MO SM 17350

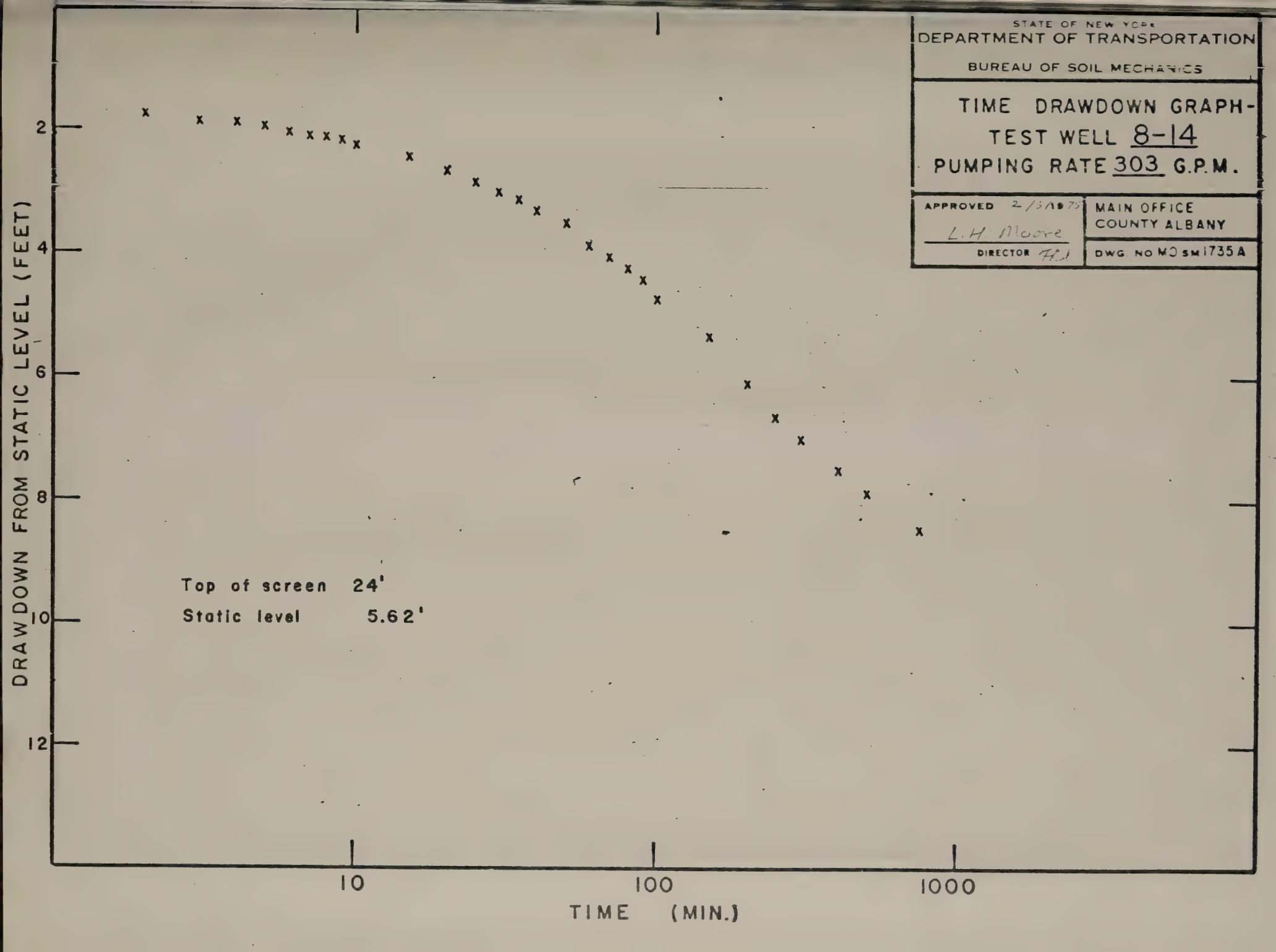
New York State Department of Transportation
Soil Mechanics Bureau

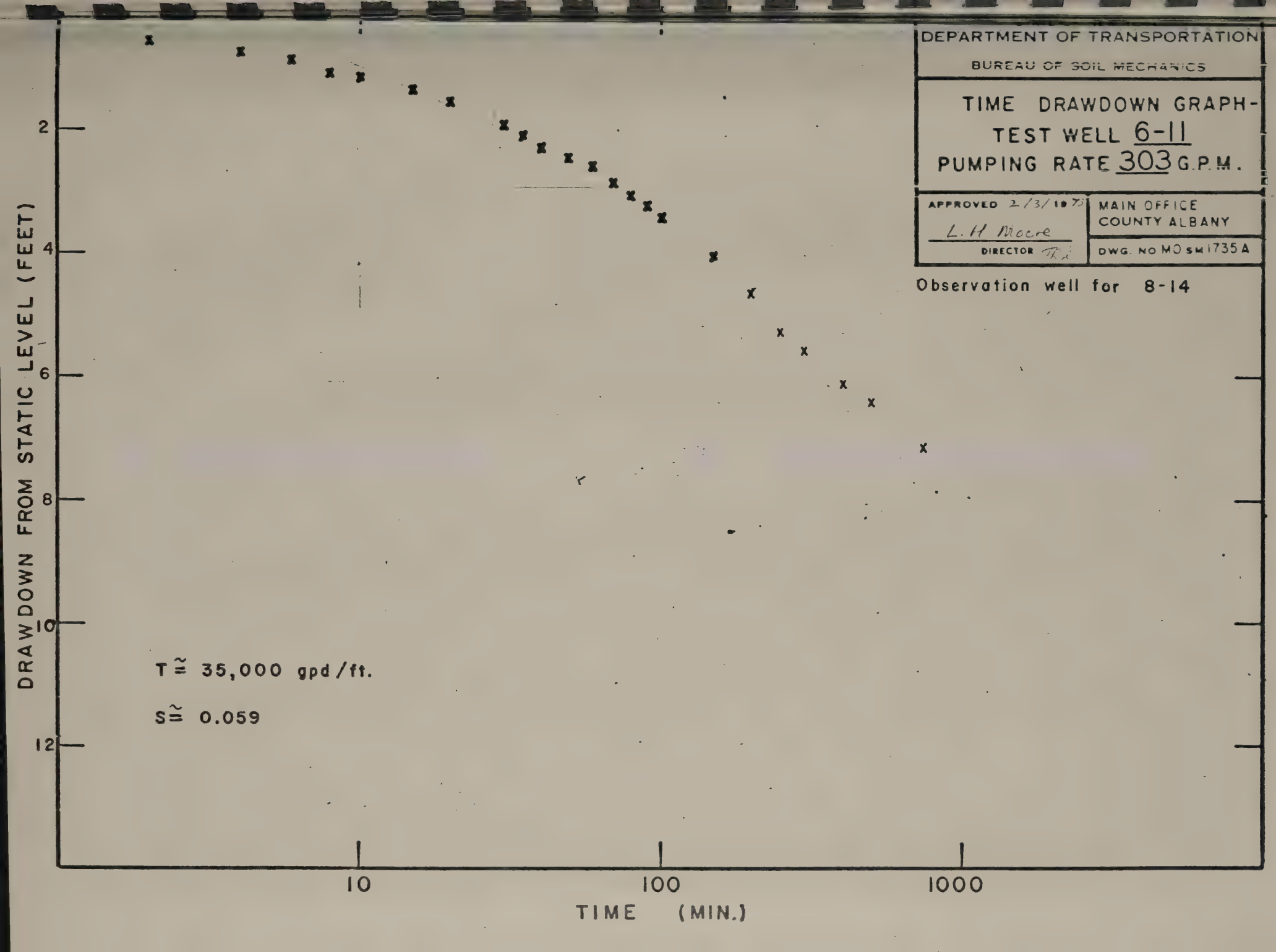
CONSTANT RATE PUMP TEST

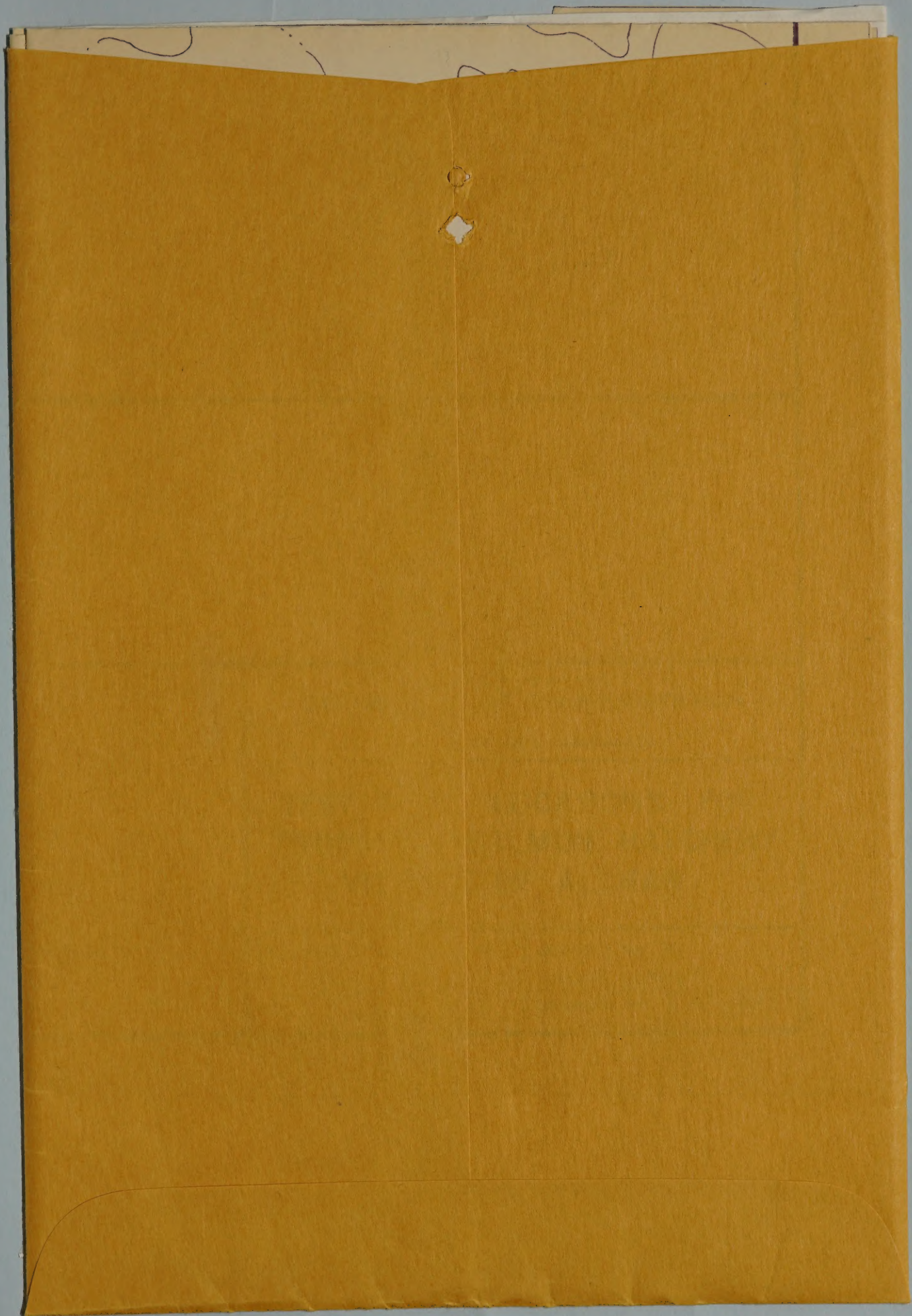
Project: GREAT LAKES FISH HATCHERY - ALTMAR
Region 3 ; County OSWEGO ; PIN E103-00-701.06
Date 1/9/75 ; Time Started 11 '5 ; Pumping Rate 303 GPM
Pump Intake 15.4 below ground surface; Water temp. _____
Weather: Above freezing. - Rain during night

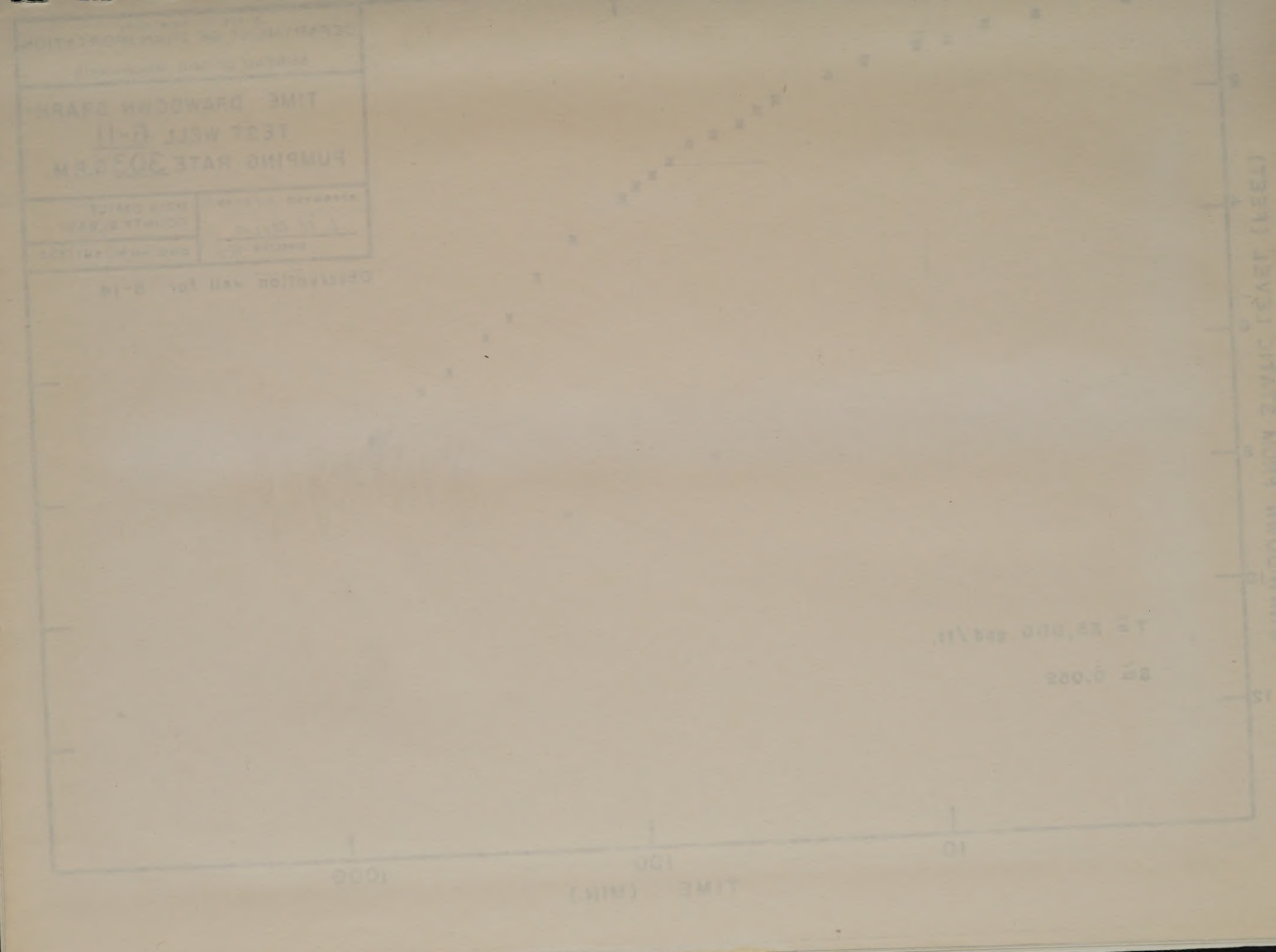
	Test Well	Observation Wells			Remarks
Hole No.	8-14	6-11			# 8-14 screened from 33'-24' with 125 slot Johnson stainless steel well screen.
Ground Elev.	574	576			
Static level below ground	5.62	5.16			
Finished	SCREEN	OPEN			
Time (min.)	Drawdown (from static level)				
1	1.58	-			
2	1.75	0.44			
3	1.85	-			
4	1.88	0.69			* WATER LEVEL had reached PUMP INTAKE by 1110 min. Pumping rate was reduced to 254 GPM for remainder of Test.
5	1.92	-			
6	2.01	0.89			
7	2.08	-			
8	2.11	1.04			
9	2.18	-			
10	2.22	1.14			
15	2.46	1.34			
20	2.69	1.56			
25	2.88	-			
30	3.03	1.94			
35	3.18	2.09			
40	3.37	2.28			
50	3.58	2.43			
60	3.91	2.59			
70	4.08	2.89			
80	4.31	3.09			
90	4.48	3.24			
100	4.70	3.44			
150	5.38	4.09			
200	6.08	4.74			
250	6.63	5.26			
300	6.96	5.55			
400	7.46	6.14			
500	7.83	6.40			
750	8.43	7.08			
1110	8.63 *	7.49			
1440	8.63 *	7.59			

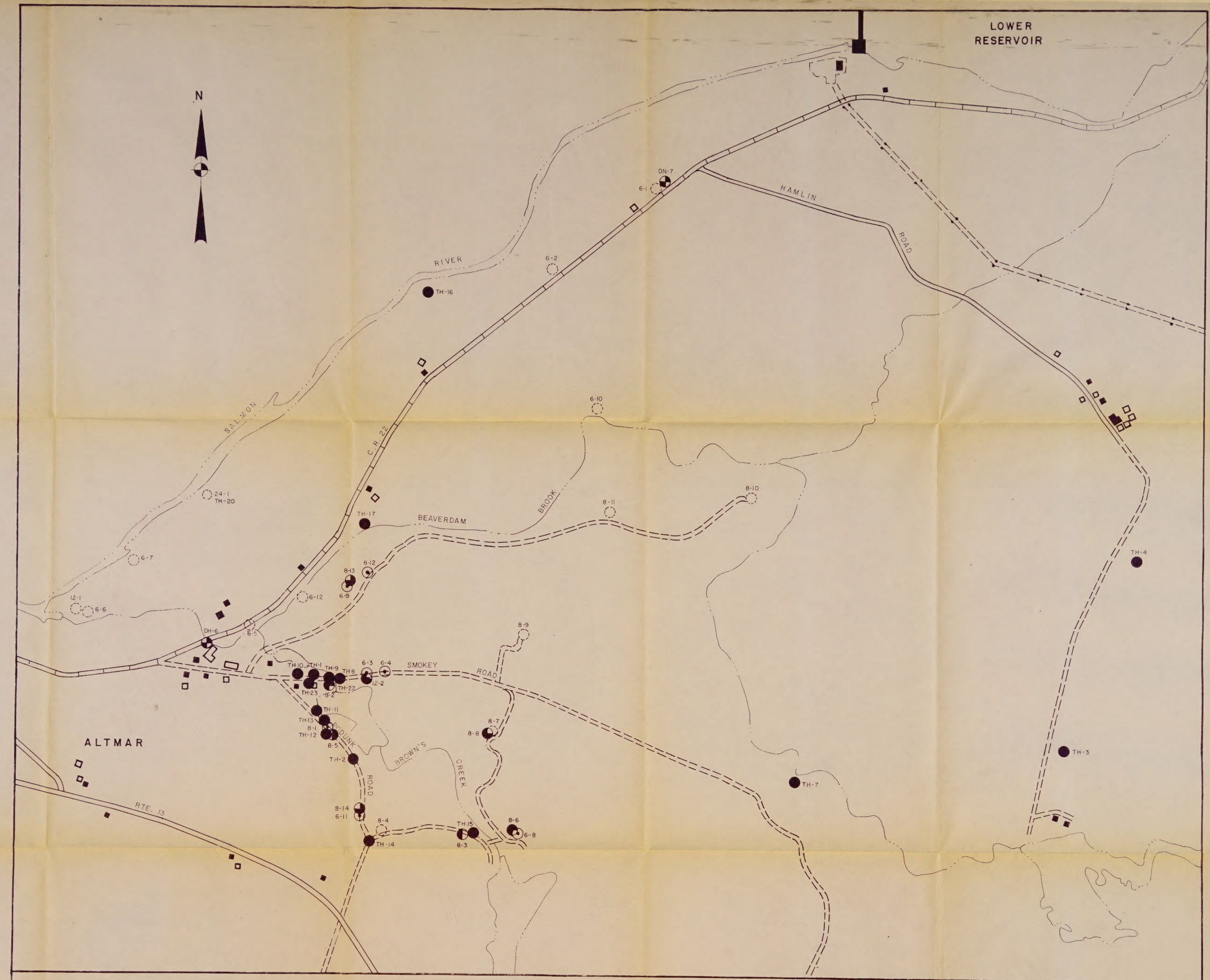



STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
TIME DRAWDOWN GRAPH-
TEST WELL 8-14
PUMPING RATE 303 G.P.M.
APPROVED 2/3/1975
L.H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG. NO MO SM 1735 A
DRAWDOWN FROM STATIC LEVEL (FEET)
2
4
6
8
10
12
Top of screen 24'
Static level 5.62'
10
100
1000
TIME (MIN.)


DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS
TIME DRAWDOWN GRAPH-
TEST WELL 6-11
PUMPING RATE 303 G.P.M.
APPROVED 2/3/1972
L. H. Moore
DIRECTOR
MAIN OFFICE
COUNTY ALBANY
DWG. NO MO SM 1735 A
Observation well for 8-14
DRAWDOWN FROM STATIC LEVEL (FEET)
2
4
6
8
10
12
T ≅ 35,000 gpd/ft.
S ≅ 0.059
10
100
1000
TIME (MIN.)







PLAN

LEGEND

- DRILL HOLE – (STATE)
- 2" WASH BORINGS
- PRODUCING WELL – (SCREENED)
- PRODUCING WELL – (ROCK)
- OBSERVATION WELL
- ABANDONED WELL
- EXISTING STRUCTURES
- ABANDONED FOUNDATIONS OR BARNS

PREPARED BY:
DRAWN BY: Paul Joseph Rogers
CHECKED BY:

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUREAU OF SOIL MECHANICS

TEST WELL LOCATIONS FOR PROPOSED SALMON HATCHERY VILLAGE OF ALTMAR

APPROVED 19
DIRECTOR

DISTRICT NO. 3
COUNTY OSWEGO
DRAWING NO. 3 SM 1849